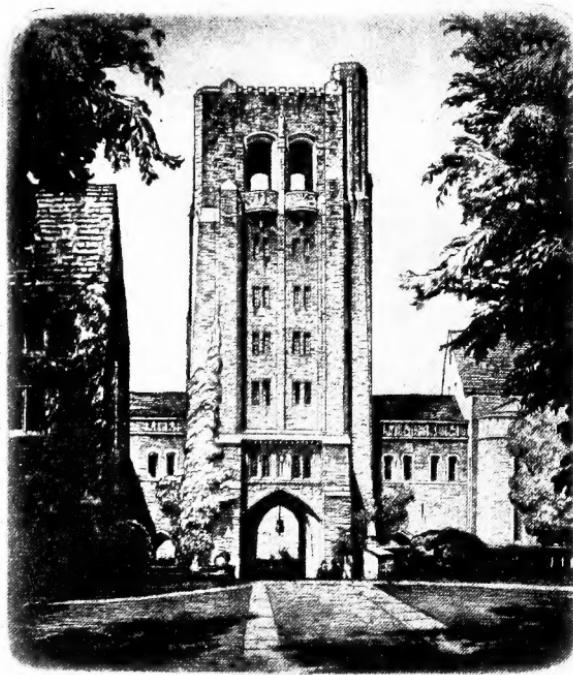




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WHARTON AND STILLE'S
MEDICAL JURISPRUDENCE.

FOURTH EDITION.

VOL. III.

PHILADELPHIA:
KAY & BROTHER,
LAW BOOKSELLERS, PUBLISHERS AND IMPORTERS.
1884.

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PREFACE TO THE FOURTH EDITION.

11165.

IN this volume, the sections between § 1 and § 262 have been revised by Dr. SAMUEL ASHHURST, and those between § 265 and § 586 by Dr. WHARTON SINKLER. The chapters on Life Insurance and on Defects of Vision (including Color Blindness), which close the volume, are new. The portions of the work which bear on juridical law have been rearranged and in a large measure rewritten so as to incorporate in them recent English and American decisions.

F. W.

Philadelphia, March, 1884.

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CHAPTER I.

SIGNS OF PREGNANCY.

§ 1. SIGNS of pregnancy may be divided into certain and uncertain. Until the period at which the pulsation of the foetal heart becomes audible there is not one sign, nor indeed any combination of signs, which will not occasionally prove treacherous. Some practitioners are in the habit of relying upon signs which by others are considered of trivial or doubtful significance. It may be remarked, moreover, that evidence of pregnancy which would be quite convincing to a practitioner of midwifery, may not be so readily accepted by a medical jurist. The latter naturally lays greater stress, by far, upon exceptional cases. In this view we class among the uncertain signs of pregnancy suppression of the menses, enlargement of the abdomen, quickening, and the sympathetic phenomena.¹

§ 2. 1st. *Suppression of the menses.*—When the catamenia are arrested in a woman previously regular, and the suppression is not followed by any morbid symptoms, this sign is usually considered quite a positive one. The exceptions that may be taken to it depend upon the great irregularity and frequent abnormal conditions of this function. Thus, pregnancy may occur in women who have never menstruated. Dr. Gregory, of Missouri, relates the case of a woman who had six living children, and had never menstruated. M. Gillette communicated to the Société d'Emulation de Paris, the case of a woman who had borne three children, was thirty-five years of age, but had never menstruated or had any vicarious discharge. Other cases are referred to in the *Am. Journ. of Med. Sci.* for April 1844. Many similar ones are cited by Dr. Reid, from Baudelocque, Lamotte, Velpeau, Bull, and others;² and the number is still further increased by those collected or reported by Montgomery.³ The same authors

¹ As to legal relations, see *infra*, § 860, *et seq.*

² *Lancet*, Sept. 1853, p. 206.

³ *Signs and Symptoms of Pregnancy*, 2d ed., p. 77.

also mention not a few examples of pregnancy occurring in women who for one or more years have ceased to menstruate.¹ The temporary absence of the menses is, moreover, not always an obstacle to impregnation, and in some cases, which are perfectly well authenticated, they were perceived only during the pregnant condition. Bau-delocque and Deventer state that they have observed instances of this kind. A still more remarkable abnormality has been witnessed in some women, who have menstruated for the first time subsequent to impregnation. Cases also are occasionally met with in which the menstrual flux, or a discharge which cannot be easily distinguished from it, occurs at the usual periods during pregnancy as well as before it, and instances are not at all infrequent in which the menses return during the early months, only in smaller quantity than usual, and for a shorter time. Burton, Maunsell, Campbell and others mention cases in which they appeared three, four and six times; similar instances fell under the observation of Dr. Tyler Smith;² and Dr. Gibb has reported one in which menstruation continued during eighteen months of lactation, and nearly nine months of the pregnancy which then took place.³ On the other hand the catamenia may be suppressed from various causes, and sometimes with no immediate bad consequences. Hence, although, as a general rule, suppression of the menses is the earliest indication of the existence of pregnancy, it cannot be relied upon as at all positive in its nature.

§ 3. 2d. *Enlargement of the abdomen, etc.*—In pregnancy, the prominence of the abdomen generally becomes obvious about the end of the third month; and, from this time, the period of pregnancy can be ascertained in an approximate manner by the gradual ascent of the womb. Nothing, however, can be more erroneous than to consider a prominent abdomen a proof of pregnancy. It may be due to dropsy, to a distended urinary bladder, or to various kinds of tumors of the ovaries or uterus, or to enlargement of the spleen or liver, or to the accumulations of flatus or of feces, and it may also arise from a retention of the menstrual discharge. So far from being a good sign of pregnancy, it should not be taken into consideration until a fair

¹ A recent American case is that of Dr. Gibbs, N. Am. Med. and Surg. Journal, i. 741.

² Lancet, Feb. 1856, p. 197.

³ Ibid., Nov. 1858, p. 475. *Vide* case by Dr. Grailly Hewitt, Transactions of the Obstetrical Society, vol. viii.

presumption is first established by other evidence. The sad story of Lady Flora Hastings, who was prematurely hurried to the grave by the brutal calumnies which the alteration in her shape, from disease, had given rise to, may serve as a caution to those who are over-hasty in their opinions.

§ 4. Enlargement of the abdomen, even independently of any solid tumor, in many cases simulates the distended uterus so exactly, and is so often associated with other signs of pregnancy, and particularly with the sensations of a moving body within the abdomen, as to deceive not only the patient, but even the experienced physician. It would scarcely be believed, were it not fully authenticated, that the Cæsarean section has been performed to remove the foetus in such cases which were mistaken for examples of ovarian pregnancy. Five of them are referred to by Montgomery,¹ and Dr. Simpson states that six are recorded in which when the abdomen was opened nothing unusual or abnormal was discovered, except a slight degree of distention of the bowels.² Usually, and when, as is most common, the distention of the abdomen arises from intestinal flatus and persistent tonic contraction of the muscles about the waist, simple percussion of the abdomen by producing a resonant sound shows that the enlargement cannot be due to the distended uterus; but sometimes a large amount of fat under the integuments may deaden the percussion sound, or an exaggerated sensibility of the skin may forbid this method of examination. In all such cases a solution of the problem is readily obtained by means of the anæsthetic agents. As soon as complete insensibility is induced by ether or chloroform, the protuberant abdomen subsides, and the delusion is exposed. With returning consciousness, however, the swelling reappears.³

§ 5. According to the observations of Elsässer,⁴ the *brown discoloration of the linea alba* was found in 377 out of 400 pregnant women, extending from the sternum to the mons veneris, in 22 only in the lower half of the abdomen, and in 1 only in the upper. At the same time, however, this author observed other women in a pregnant condition in whom no trace of this discoloration could be per-

¹ Signs and Symptoms of Pregnancy, 2d ed., p. 405.

² Times and Gaz., Sept. 1859, p. 225.

³ For several cases of Spurious Pregnancy, see Times and Gaz., Oct. 1855, p. 342.

⁴ Henke's Zeitschrift, 1852, 4 H.

ceived, and still others, not pregnant, in whom it was found ; so that, although it is no doubt present in the majority of instances, there can be no safety in relying upon it as a sign of pregnancy. Tanner utterly denies that brown discoloration of the abdomen possesses any significance whatever as a sign of pregnancy.¹ These conclusions agree with those which were earlier reached by Mr. Furner and Dr. Cormack, the latter of whom also found the dark abdominal line occasionally in males affected with disorders of the intestines or of the urinary organs.² *Prominence of the umbilicus* is sometimes spoken of as a sign of pregnancy, but it does not occur until the abdomen is considerably distended by the uterus, at which time certain evidence of the presence of a foetus is ascertainable by other means. It is equally an attendant upon many cases of distention of the abdomen from any internal cause.

§ 6. 3d. *Changes in the mouth and neck of the womb.*—These changes vary, according as they are observed in those who have had children and in those who have never before been pregnant. We do not propose to describe them at length.³ It is sufficient here to remark, in general, that the uterus sinks somewhat lower in the pelvis in the early months, and thus the *os tineæ* is brought nearer to the entrance of the vagina, and is at the same time tilted somewhat backward. This gives rise to the idea that the *cervix* is lengthened, which is not the case. It does not undergo any change in length until after the fifth month, when it becomes gradually shorter and broader (being merged into the body of the womb), until the close of gestation, at which time it is found to be entirely obliterated. The signs from the neck and mouth of the womb previous to the sixth month, are not to be greatly depended upon. Dr. J. Matthews Duncan states that the *cervix* does not undergo shortening at any time during pregnancy, or at least before the few concluding days, at which time it becomes entirely obliterated. In this view Tanner and J. Taylor, with other authorities, now coincide.⁴

§ 7. 4th. *Quickening* is defined by Dr. Evory Kennedy to be “a

¹ Signs and Diseases of Pregnancy, 2d ed., Phila., 1868, p. 96

² Month. Journ. of Med. Sci., Feb. 1844.

³ For a good description, see Montgomery on the Signs of Pregnancy, 2d ed., 183.

⁴ Edin. Med. Journ., March 1859, p. 773; American Med. Times, June 21, 1862.

sense by the mother of the first perceptible motion in the uterine region, about the sixteenth week after impregnation, having for its cause either change of position of the uterus, or the motions of the foetus," or, what is more probable, its first coming in contact with the walls of the uterus. It is frequently attended by fainting and weakness, and sometimes by a discharge of blood. Quickening occurs at no fixed period in the course of gestation. It usually is perceived at the time stated above, but occasionally earlier, and sometimes not until later. Occasionally, also, the sensation is not experienced. On the other hand, nothing is more common than for women to suppose that they have quickened, when they are not even pregnant. Dr. Kennedy says : "I have known women to insist upon their having felt the child moving or kicking within them, not only in cases where there was indubitable proof of the child's death at the time, but also, as mentioned in the case of quickening, where no child was in the uterus."¹ Queen Mary, of England, distinctly felt "the babe leap in her womb" when the Pope's legate was introduced to her, although dropsy was the sole result. Kleine² reports the case of a lady who *supposed* herself pregnant, and that she felt the motions of the child, and who at the proper period was seized with the pains of labor. A case is reported by Dr. Heming, in the *Lancet*, in which physician and patient were both deceived. He was called to see the wife of a respectable tradesman; she was in labor, it was said, and the physician in attendance had been with her two days and nights. This gentleman told Dr. H. that he had felt the head of the child at first, but could not then say what part was presenting. An examination was made, and the woman found to be not even pregnant. She said that she had thought herself pregnant, because her stomach and bosom had lately become greatly enlarged, and because she had frequently felt the movements of the child, and had been irregular in her monthly periods.

§ 8. Some of the most experienced and competent judges have fallen into the error of supposing that they felt these movements in women who were not pregnant at all.³ In these cases the error has probably arisen from mistaking for uterine or foetal contractions, those of the abdominal muscles. Dubois mentions a woman on

¹ *Obstet. Auscult.* p. 26.

² *Hufeland's Journal*, 1815, p. 65.

³ *Deweese's Essays*, p. 337; *Dub. Med. Journ.*, vol. vi., p. 536.

whom the *toucher* was practised, and who possessed the power of imitating these movements at will. In other cases the contractile movements of the uterus distended by a dead foetus, or by any other body, have led to the same erroneous conclusion ; and in others, again, intestinal movements excited by flatus have deceived both patient and physician.

§ 9. The sensation which has received the name of quickening is not always equally well marked in its character ; sometimes it is attended with fainting, weakness and a general commotion of the system, while at others it resolves itself into an indistinct perception of the first feeble movements of the child. These have received from the French the name of *pattes d'araignées*. By some, the sensation is supposed to be due to these movements ; by others, it is attributed to the sudden rising of the womb from the pelvis. To which of these causes it is really due, we shall not venture to decide, considering the reasons for either inconclusive. The fact which, above all others, is of importance, is, that the sign is strictly a *subjective* one. It is perceptible by the woman alone, and her veracity must therefore determine our acceptance of it. In midwifery practice, the statement of the female is not called in question, unless her physician have suspicion that she may have been mistaken in her sensations ; in legal medicine, however, the medical examiner should first convince himself by a direct examination of the probable existence of pregnancy, before questioning the woman, since it is evident that her assertions may be influenced by various considerations of interest and advantage. The examination will enable him to determine whether there is a foetus in the womb, and whether it be living or dead, as well as to fix the probable period of pregnancy. Unless her statements corroborate the results of this physical examination, they may, if these results are positive, be entirely disregarded. Hence, the fact of quickening may be looked upon as a superfluous sign of pregnancy, having no value, except when sustained by other clear evidence of the existence of this condition.¹

§ 10. The undue importance attached to quickening, from the earliest times, arose from an error which modern science would long since have consigned to oblivion, had it not been fatally incorporated into the laws of various countries. It was supposed that the foetus

¹ As to legal relations of quickening, see *infra*, § 860, *et seq.*

became endowed with vitality at a variable epoch after conception, and that quickening was an indication of the moment at which it became thus animated. Such an error, explicable in the infancy of physiological science, by an inadequate knowledge of the development of the embryo, confirmed by absurd ecclesiastical canons, and handed down from one criminal code to another, should now, when ignorance is no longer excusable, disappear from our penal system. To whatever cause the act of quickening may be attributed, its explanation is not dependent upon a solution of the question relative to the precise moment at which the child becomes endowed with life. If it be due to the first motions of the child perceptible to the mother, it is merely an indication of the strength of its *muscular movements*; and, if it is caused by the sudden rising of the uterus from the pelvis, it evidently has a still more distant connection with the phenomena of life. No serious argument is required to prove that the foetus, in its embryonic condition, is a new being, living by its connection with its mother, and dying when this is destroyed. However rudimentary its form, it is not an inorganic body, constituted by the casual aggregation of atoms, but a living creature, from whose undeveloped lineaments a perfect human shape is to be evolved. A pulsating heart, and a nervous tract, are among its earliest recognisable elements. Reason and observation equally declare its essential original vitality.

§ 11. The following remarks, by Prof. Hodge, forcibly illustrate these truths :—

“ In a most mysterious manner brought into existence, how wonderful its formation ! Imperfect in the first instance, yea, even invisible to the naked eye, the embryo is nevertheless endowed, at once, with the principles of vitality ; and, although retained in the system of its mother, it has, in a strict sense, an independent existence. It immediately manifests all the phenomena of *organic* life ; it forms its own fluids and circulates them ; it is nourished and developed ; and, very rapidly, from being a *rudis indigestaque moles*, apparently, an inorganic drop of fluid, its organs are generated and its form perfected. It daily gains strength and grows ; and, while still within the organ of its mother, manifests some of the phenomena of animal life, especially as regards mobility. After the fourth month its motions are perceptible to the mother, and in a short period can be perceived by other individuals on due investigation.

“ The usual impression, and one which is probably still maintained

by the mass of the community, is that the embryo is perfected at the period of quickening—say the one hundred and twelfth or one hundred and twentieth day. When the mother first perceives motion, is, considered the period when the foetus becomes animated—when it receives its spiritual nature into union with its corporeal.

“These and similar suppositions are, as has been already shown, contrary to all fact, to analogy, to reason, and, if it were not for the high authorities—medical, legal and theological—in opposition, we might add, to common sense.

“What, it may be asked, have the sensations of the mother to do with the vitality of the child? Is it not alive because the mother does not feel it? Every practitioner of obstetrics can bear witness that children live and move and thrive long before the mother is conscious of their existence; and that women have carried healthy living children to the seventh, and even to the ninth month, without being conscious of their motions. Moreover, how can a foetus be termed *inanimate* when it grows, of course is nourished, and manifests all the phenomena of life? The supposition of inanimate embryos capable of being developed is, at the present day, an absurdity. From the moment of conception it must be alive, for immediately it begins to be developed; it is separated from the ovary, where it was generated, and travels some three or four inches, through a narrow tube or canal, to the uterus, as much disconnected from the mother as the chick in ova is separated from the parent hen. Its subsequent attachments to the mother, by means of the placenta and uterus, are so indirect (as will be hereafter demonstrated) that we will be justified in asserting that the mother has little more influence upon the child in utero than the parent bird has upon its offspring in the egg.

“If the question, therefore, be returned upon us, When does that mystical union between our corporeal and spiritual nature, between matter and spirit, body and soul, occur? we answer, at the time of *conception*. It is then, only, the father can, in any way, exert an influence over his offspring; it is then, only, the female germ is in direct union with the mother—the connection afterwards is indirect and imperfect. To suppose that the body only is generated at conception, and that the spirit is subsequently added, is, in the absence of all direct revelation on the subject, philosophically untrue—being at variance with the facts and with reason, as has already been illustrated and enforced.” It is readily seen how important is the bear-

ing of these very true remarks of Dr. Hodge, upon the subject of abortion, and how imperative it is that there should be a wider dissemination of this knowledge among the general public upon moral grounds.

§ 12. 5th. *Sympathetic phenomena*.—Pregnant women display various consensual symptoms, which, when confirmed by other signs, compared with their sensations in previous pregnancies, or with their usual health in the unimpregnated condition, are not without considerable weight in determining the existence of pregnancy. But there is nothing more variable than these symptoms. Some women go through the whole of their pregnancy without being affected with morning sickness, salivation, dyspepsia, longings, disgusts, etc. ; while others are hardly ever free from some of these annoyances. Further, they may be easily feigned, where the female is desirous to persuade herself or to deceive others.

§ 13. A change in the *condition of the breasts* is of more importance. They become larger and firmer, knotty, and somewhat tender to the touch, and large blue veins may be seen meandering over the surface; the nipple and the follicles around it become more prominent, and the areola wider and of a dark-brown color. In some females the projection of the nipples and the enlargement of the breasts may be more or less hindered by corsets. The increase in the size of the breasts, being due mainly to the *secretion of milk*, does not, as a general rule, occur until the later periods of pregnancy, and sometimes not until delivery takes place. Occasionally, also, certain diseases of the uterus and ovaries will cause a tumefaction of the breasts. Retention of the menses from an imperforate hymen, fibrous tumors of the uterus, and ulceration of the mouth and neck of the uterus, are frequently, says Dr. T. Smith, concerned in these mammary changes; and habitual and excessive copulation sometimes has the same effect. The presence of milk in the breasts is of value, as a sign, only in cases where a woman never before pregnant, and menstruating regularly, has the catamenia suppressed.¹

¹ For a large number of curious instances of the secretion of milk in women beyond the age of child-bearing, and in others where it was developed under extraordinary circumstances, *vide Beck's Med. Journ.*, vol. i., p. 220. Also Dr. Dunglison's case of a man fifty-five years of age, who performed the office of wet-nurse for several years (*Physiol.*, p. 833). Dr. Battersby gives an instance of a male child, three weeks old, from whom a drachm of milk could be drawn

§ 14. The changes taking place in the *areola* are considered, by Dr. Montgomery and some other eminent authorities, to afford very valuable evidence of pregnancy. The essential characters of the true areola resulting from pregnancy, are described to be a circle around the nipple, whose color varies in intensity according to the complexion, being generally much darker in persons with black hair, dark eyes and sallow skin, than in those of fair hair, light-colored eyes and delicate complexion. It becomes darker in color, but mottled, and wider as pregnancy advances. The skin over it is moist, and the follicles become prominent. These phenomena, in a woman not previously pregnant, when found in connection with other reliable signs of pregnancy, may confirm the inference made from them. Viewed singly, the changes in the areola will be found to be far from constant in their appearance. The complexion of the female has a good deal to do with their production; and, as Dr. Kennedy remarks, "we will often observe them very distinctly marked in virgins of a dark appearance, whilst in pregnant women of fair complexion no trace of them will be visible, even when they are advanced in this state. Again, where they have once been well marked, in consequence of one or more pregnancies, they seldom or never disappear entirely; and on this account in cases of married women, they must be acknowledged as a test far from positive in its nature." Dr. Reid¹ observed them in a woman not pregnant but suffering from a chronic tumor of the left breast, and found that none of them were present in a woman who was soon after delivered of a living child. They are also known to occur in a variety of uterine affections. Siebold says that they may occur inde-

by pressure from the breasts. Analyzed by Mr. Moore, under the microscope, it was found to be a genuine lacteal secretion (Dublin Med. Press, April 1850). See also Guillott's observations, Ed. Month. Journ., Feb. 1854, p. 165. A most interesting case is of recent occurrence. A woman fifty-five years of age, whose catamenia had ceased for many years, and who was also in bad health, undertook to bring up an infant whose mother had died in childbed. To keep it quiet, she was in the habit of putting it to her breast. At the end of six months she was surprised to find that the child was really drawing milk from her breasts. All other nourishment was suspended, and the child, which before had been weakly, soon became hearty and vigorous entirely upon the milk which he drew from her. She continued to nurse him for twelve months, at which time she weaned him. (E. Warren, M. D., Edenton, N. Car., in Va. Med. and S. Journ., 1854.) And see as to legal questions involved, *infra*, § 776, *et seq.*

¹ Lancet, Dec. 1838.

pendently of pregnancy, and in cases of disease of the womb; and Dubois, that they may follow a suppression of menses, whatever its cause. Dr. Simpson, of Edinburgh, in a case of spurious pregnancy under his own care, observed that the areolæ became dark and their glandulæ enlarged. This was so marked that a drawing of them was made about the third month. These sketches presented all the usual changes as distinctly as those figured by Dr. Montgomery in his plate of the true areola at that period; and, being preserved, they were found, on comparison, as marked as those of the patient's own breasts were at the same date, a short time after, when actual pregnancy supervened.¹

Dr. Routh² maintains, that, while in the case of fibroid tumors of the womb the areolæ undergo changes, they yet differ very materially in appearance from the changes which occur in pregnancy. The differences as laid down by Dr. Routh principally concern the follicles, and his conclusions may be thus tabulated:

Pregnancy.

1. The development is alike on both sides.
2. Follicles are white, especially when the skin is tightened.
3. True white follicles are present.
4. Follicles most numerous on the border of the areola.
5. Peculiar white honey-comb layer external to the dark areola is present.
6. Cardiac sounds imperceptible.
7. Umbilicus prominent.

Fibroids.

1. The breasts and follicles are unsymmetrical.
2. Follicles have the same color as the areolæ.
3. True vesicular or papuloid follicles, white in color, do not occur.
4. Follicles most numerous on and near the nipple.
5. No white layer on the areola.
6. Cardiac sounds can be heard by auscultation of the tumor.
7. Umbilicus puckered.

§ 15. Earle³ contends that too little attention is paid to the condition of the breasts, which he thinks always present early and reliable signs of pregnancy. We have thought it well to epitomize his directions and conclusions as follows:

1. Both breasts should be examined.
2. Enlargement to the eye is deceptive, but hypertrophy of the gland proper, perceptible to the

¹ Edinb. Monthly Journ., July 1853.

² Brit. Med. Journ., 1864, i. 181.

³ Lond. Med. Review February, March and April 1862.

touch, is a quite valuable sign. 3. Enlargement of the veins is important in accordance with its amount, while if they traverse the areolæ they are characteristic. 4. White streaks in the skin (cicatricial) evidence either prior or present pregnancy, and in general are readily distinguishable. 5. Increased diameter of the areolæ is a very important sign in women pregnant for the first time. 6. Intensified color of the areolæ is of most importance in primiparæ, and in the latter months of gestation. 7. Elevation of the areola above the surrounding skin is most frequently found in the primiparous woman, and when found may be regarded as characteristic of pregnancy. 8. A shiny mahogany-colored areola is a very valuable indication, and 9, secondary areola, occurring most frequently in primiparæ, is conclusive. 10. The presence of branny scales has some value, which is much increased if any fluid can be expressed from the nipple. 11. The presence of sebaceous follicles is conclusive, and is the most important of the mammary signs in the early months of multiparous women, while 12, a raised areola and the presence of milk possess the highest value in the case of a woman carrying her first child. 13. The age of the foetus cannot be arrived at by an examination of the breasts. Five kinds of follicles are enumerated by the author as existing in the areola, three of which, containing subaceous material, present evidence of pregnancy.

§ 16. A bluish or dusky color of the vagina, produced by venous congestion, was originally declared by Jacquemin to be an almost certain sign of pregnancy in females who are not subject to hemorrhoids. This statement has been confirmed by Kluge, Parent-Duchâtele, Kilian, Wistrand, and Montgomery, the last of whom says, "In every instance, without a single exception, in which I have found this appearance marked, pregnancy co-existed."¹ It should, however, be remembered that pregnancy may exist, although this sign may not be visible.

§ 17. A very high authority, Dr. Robert Barnes,² says that a reliable sign of pregnancy in the early months is a flattening of the upper walls of the vagina, which is caused by enlargement of the womb with anteversion, which carries the os backwards and necessarily makes the superior wall of the vagina tense.

§ 18. The more or less distinct presence of several phenomena,

¹ Signs and Symptoms of Pregnancy, 2d ed., p. 245.

² Brit. Med. Journ., 1868.

which have been now considered, independently of the existence of any product of conception, characterizes the cases known as those of *spurious pregnancy*. They might be expected to be met with most frequently in women who have never borne children, and are, therefore, unacquainted with the sensations and conditions peculiar to pregnancy. But such is not the case. The most numerous examples of this delusion are presented by mothers approaching the period when the menses cease, and which is usually marked by uterine disorders of various kinds. Yet many are met with in the first year after marriage; and in such the source of the delusion is an instinctive longing for becoming a mother. To this powerful instinct must be attributed the occurrence of many phenomena of pregnancy in unmarried and pure women, associated with evidences of a hysterical or a highly nervous temperament, and the periodical *aestus* which often precedes and accompanies the catamenia. It is impossible to determine accurately whether the delusion has a mental or a physical origin, or in what degree either cause predominates; but it is probable that a state of excitement of the reproductive organs occasions impressions, if not sensations, which awaken corresponding ideas in the mind, and that these in their turn render the various physical phenomena more intense. The vivid descriptions of their sensations, therefore, given by the subjects of these various cases, are not necessarily to be taxed as inventions, nor are the physical phenomena which they display to be regarded always as cunning tricks intended to deceive. They represent convictions as profound and distinct as those of the monomaniac, and are often as difficult to eradicate.

§ 18 a. All of the signs which have now been referred to are uncertain in their nature, and various objections may be urged against each of them, but, if a majority of the more important exist, the presumption of pregnancy is necessarily very strong, although *certainty* cannot be obtainable from them. The same objection cannot be made against the signs which we have designated as *certain*, from the fact that when found they indicate the presence of a foetus infallibly; although it cannot, indeed, always be inferred from their *absence* that pregnancy does not exist. This class of signs demonstrates, therefore, the presence of a foetus in the womb, and are obtained by physical methods of exploration, inspection, touch, auscultation, etc.

§ 18 b. The *passive movements* of the child are obtained by the manœuvre termed *ballottement* by the French. The female being in

a standing posture, the finger is introduced into the vagina, up to the mouth of the uterus, while the other hand is placed upon the abdomen. The womb is suddenly raised up by an abrupt movement of the finger, and, falling again upon it with a slight shock, communicates the sensation of sudden displacement of a body contained in a liquid. This test is seldom applicable before the fifth month, and sometimes not after the eighth, owing either to the position of the child or the small amount of amniotic fluid present. In competent hands the test is a safe one; but it can give evidence only of the presence of a foetus—whether this be living or dead must be ascertained by other means. Another mode of performing ballottement, but which is inferior to that just described, consists in giving sudden movements to the uterus by the hand, placed upon opposite sides of the abdomen while the woman is in erect posture or lying upon her side. Bimanual examination with one or more fingers in the vagina, while pressure is made with the other hand upon the abdominal wall, is a valuable help to arriving at a diagnosis in these cases, and it is largely practised by obstetricians at the present time to ascertain the presentation before labor sets in.

Dr. Adolph Rasch maintains that intrauterine fluctuation can be made out as early as the seventh week.¹

§ 18 c. *The active movements of the child* become perceptible for the first time usually in the fourth month. They are at first extremely feeble, and in some cases remain so during the whole period of gestation. There are some rare cases in which no movement whatever has been felt by the mother throughout pregnancy; and, on the other hand, in some instances of spurious pregnancy the movements attributed to the child are described as violent. In the majority of cases, however, they are very distinct in the latter half of pregnancy. They are perceived by laying the hand upon the abdomen, and making gentle pressure upon it, or after dipping the hand in cold water before touching the skin. Sometimes an escape of gas from one portion of the intestine to another, or even the involuntary contraction of the abdominal muscles or of the uterus itself, may momentarily deceive the examiner, but a little attention will prevent all chance of mistake from these sources. The child may not always be made to

¹ Brit. Med. Journ., Aug. 30th 1873; American Journ. Med. Sciences, Oct. 1873, p. 560.

execute movements; hence, both the woman may be pregnant and the child alive, without it being revealed at the time by this mode of physical examination of the abdomen.¹ Pajot thinks that the foetal impulse from the spontaneous movements of the child is sometimes a sign of value at the third or fourth month.²

§ 19. 6th. *Pulsation of the foetal heart.*—The pulsation of the foetal heart resembles the ticking of a watch, and is discoverable at different portions of the uterus, according to the period of pregnancy at which the observation is made. These sounds cannot be mistaken for any other heard in the abdomen, since the pulsation is a double one, and not isochronous with the maternal pulse, being generally about 130 beats in a minute, varying, however, considerably in frequency, and becoming less frequent as pregnancy advances. These pulsations are first distinctly audible about the middle of the fifth month; but M. Dépaul says that it is possible to hear them one month earlier than this period, he having succeeded in perceiving them, with great distinctness, by depressing strongly the abdominal walls, and placing the stethoscope upon the fundus of the uterus. This manœuvre would evidently succeed only in very thin persons, and when employed by a practised auscultator. The sounds may be more audible at one examination than at another; indeed, to an inexperienced auscultator, they may frequently be inaudible. It is extremely rare, however, *not* to find them in the last three months of pregnancy, except when the foetus is dead. Of 906 women examined at this period of pregnancy, says M. Dépaul, the sounds were absent in 8 only. Yet in some rare cases they have been inaudible throughout pregnancy. The auscultation of the foetal heart is, therefore, a test of the existence of a foetus far more reliable than any other sign or combination of signs. It is easy of application, can be employed at a comparatively early period, and can hardly ever fail of being discovered when pregnancy really exists.

§ 20. 7th. *Other sounds.*—There are two other sounds indicative of pregnancy, which are ascertained by auscultation, but neither of which can afford the same positive proof as the pulsation of the foetal heart. These are the uterine and the umbilical *souffle*. The first is a peculiar blowing, cooing or whistling sound, audible over a greater or less extent of the uterine tumor, sometimes confined to one spot,

¹ Dépaul, *Traité Théorique et Pratique d'Auscultation Obstétricale*.

² *Annales de Gynæcologie*, March 15, 1874.

and generally most audible in the lower and lateral portions of the uterus. It is said to be caused by the passage of the blood through the uterine arteries. It is isochronous with the pulse of the mother. It has been perceived as early as the tenth week, but most generally cannot be discovered until a later period. Its intensity increases up to the end of the seventh month (Dépaul). Of 307 women who had passed the fifth month, this author observed the uterine souffle in 295. M. H. F. Nägele¹ found it absent in only 20 cases out of 600. In affixing a value to this phenomenon, as a sign of pregnancy, the observations of M. Dépaul render it positive that a souffle perfectly similar to this is heard when the uterus is developed from any other cause than pregnancy. He relates a number of cases which show conclusively that such is the case; in some of them, post-mortem examination disclosed fibrous and carcinomatous tumors imbedded in the walls of the uterus.² If, however, a certainty can be obtained that the development of the uterus is not due to this cause, the sign is hardly less characteristic than the foetal cardiac pulsation. The extreme difficulty, if not impossibility, of obtaining such certainty must always be kept in mind.

§ 21. The sound discovered and described by Dr. Evory Kennedy, and called by him the umbilical sound (from the supposition that it proceeds from the umbilical vessels), is of trivial importance in the diagnosis of pregnancy. It is not audible in the majority of cases, requires an experienced ear, and, when found, is a superfluous sign, because the pulsation of the foetal heart and the uterine souffle will be also perceptible at the same time, and are not open to the same objections as is the one in question.

§ 22. 8th. *Kiestein in the urine*.—Very little need be said of this substance as a test or sign of pregnancy. The name of *kiestein* is applied to a substance which occurs at first as a fleecy cloud, and afterwards as a fatty pellicle or scum, in the urine of pregnant women, after it has been allowed to stand for a few days. Dr. J. Braxton Hicks³ recommends the addition of two teaspoonfuls of rennet to

¹ Die geburtshülfliche Auscultation, Mainz. 1838.

² The same opinion is held by Kiwisch, whose opportunities for verifying the accuracy of his views are very extensive, and whose critical acumen and sound judgment have gained him a wide reputation.—Vid. *Klinische Vortraege*. Bd. 2, p. 561. Prag. 1849.

³ Lancet, Sept. 17, 1859.

three fluidounces of urine to hasten the formation of the pellicle. Its nature is not very well understood, but Dr. Golding Bird supposed it to contain the caseous elements of milk mixed with the earthy phosphates. There is, however, considerable discrepancy of opinion respecting its constitution, while at present few are disposed to look upon it as of any value as a sign of pregnancy. Among the later observations are those of Dr. Veit, who comes to the conclusion that the so-called pellicle of kiestein is no peculiar matter at all, and is not of the slightest value as a sign of pregnancy. In urine of both non-pregnant and pregnant women pellicles are formed, containing vibriones and frequently the triple phosphate; the chief difference between the respective urines being, that in that of pregnant women, alkaline, and in that of non-pregnant women, acid reaction more frequently manifests itself. This may depend, perhaps, upon the greater concentration of the urine in pregnancy, and the larger portion of mucus mixed with it.¹ Tanner, however, treats of the presence of this substance among the minor signs of pregnancy as tending to strengthen other evidence.²

Montgomery, after reviewing all the evidence which has been published upon this subject, and comparing with it his own experience, concludes that we should be very slow to place any confidence in the sign in question, except as a "corroborative indication."³ Dr. G. T. Elliot, who conducted his investigations at the Bellevue Hospital, New York, concludes that there is nothing positive to be learned from the urine in regard to the existence of pregnancy, and that its appearances can scarcely even be called corroborative.⁴

In conclusion, we draw attention to the fact, that, as the result of his vast experience, Casper says that disputed pregnancy is of much more rare occurrence *in foro* than is generally believed to be the case.⁵ When, however, a case of suspected pregnancy presents itself, in which the sure test of time cannot be waited for, the physician should observe certain rules. 1st. He should never rely on a single symptom, but base his diagnosis upon the presence or absence of several. Even the sounds of the foetal heart should not be implicitly relied upon when alone, for the ear may be deceived. 2d. He should only

¹ Am. Journ. Med. Sci., Jan. 1822, p. 259.

² Op. cit., p. 136.

³ Op. cit., p. 307.

⁴ New York Journ. of Med., Sept. 1852, p. 181.

⁵ Forensic Medicine, New Sydenham Society's Translation, vol. iii., p. 349.

give a most carefully guarded opinion in the early months of gestation, and 3d. He should never commit himself to an opinion without a thorough examination, in which every item has been gone over to his own entire satisfaction, and a consultation with another physician has been had should doubt still exist. Attention to these rules, which are in substance those laid down by Woodman and Tidy,¹ will save him from much annoyance, and perhaps from mortification.

CHAPTER II.

DELIVERY.²

§ 23. 1st. *Signs of recent delivery.*—Within a week or ten days after delivery at term, the following signs are more distinct and well marked the earlier the examination is made. The countenance of the female is pale, her skin warm and moist, the body languid, and the mind and feelings very impressionable. The breasts are more or less distended, and their veins very distinct upon the surface. They are increased in weight, and the knotty masses of lactiferous tubes and glands are very easily felt. The nipples are prominent, and watery milk spontaneously or by pressure exudes from them. The integuments of the abdomen are loose, lying in folds, marked with livid lines, which at a later period become whiter than the surrounding skin, and resemble scars; the uterus can be felt behind the pubis, like a large firm ball; the external organs of generation are moist, relaxed, and swollen, and the vagina, both at its entrance and throughout, is very capacious, and free from folds. The mouth of the womb is low, open about three-quarters of an inch, its margins very soft and relaxed, and sometimes slightly lacerated. A sanguinolent mucus exudes from the internal organs of generation. This discharge is known under the name of the lochia; its odor is peculiar, and easily recognised by those who have once perceived it. Such are the prin-

¹ Forensic Medicine and Toxicology. Philadelphia, 1882.

² As to legal relations of infanticide, see *infra*, § 860, *et seq.*

cipal signs of delivery, and in their combination they present a characteristic picture which can leave no room for doubt of a recent confinement. Taken separately, however, there is hardly any one which is not liable to exceptions. Thus milk may be secreted independently either of pregnancy or delivery, as has been shown in the chapter on the "Signs of Pregnancy." Yet the manner in which the secretion takes place after delivery, with the attendant warmth of the skin, the turgescence of the glandular structure of the breast, and a certain amount of constitutional sympathy, called "milk fever," can rarely, especially during the first few days, allow one to be in doubt of its cause. There are, indeed, numerous cases in which no milk is secreted, and although even in these a certain degree of turgor and warmth may generally be observed, yet an opinion must be based upon a further examination.

§ 24. A microscopic examination of the milk may sometimes contribute to prove the recent occurrence of parturition. This solved all doubt in a case reported by Mr. Mercer Adam. The body of a new-born child, much decomposed, was found in a moss in the South of Scotland; it appeared to have been dead four or five weeks. Suspicion having fallen upon a young woman who was supposed to have been delivered secretly about that time, she was arrested, and acknowledged that she had borne a child about a year and a half before, which she had nursed until within three months of her apprehension, but firmly denied having been recently delivered. No feasible plan of deciding the question appearing, some one suggested that her milk should be examined by the microscope. This was done, and it was found to abound in *colostric* globules. "This showed parturition to have lately occurred." The girl finally confessed that she had recently given birth to a still-born child.¹

§ 25. A case is reported by Rothamel² in which stains of milk, vernix caseosa, and meconium were analyzed, and evidence thereby obtained of a concealed birth and child murder. The presence of milk, possessing the peculiarities belonging to that fluid soon after delivery, was considered to be proven by finding fat, sugar of milk, caseine, potash, lime, and magnesia, with hydrochloric, sulphuric and phosphoric acids. Vernix caseosa was evidenced by fat, mucus, and

¹ Edinburgh Monthly Journal of Medical Science, May, 1853.

² Hencke, vol. xxxix. part I.

carbonate of lime, while meconium appeared to be indicated by fat, cholesterine, mucus, fatty coloring matter, with the absence of biliary coloring material and bile acids.

§ 26. The condition, as above described, in which the genital organs, after delivery, are found, is one which it is entirely impossible to mistake for the result of disease, accident, or intentional injury. The only difficulty in ascertaining the fact of delivery having taken place arises in those cases where an examination has not been made at a sufficiently early period. After the establishment of the flow of the milk, and the disappearance of the relaxed and tumid condition of the genital organs, there remain hardly any other signs than the whitish streaks before referred to, indicative of the previous distension of the abdomen, and, in addition, the state of the *os uteri*. If it can be shown that abdominal dropsy or tumors have not been present, then the white lines, being usually permanent, afford good evidence of the woman having borne one or more children, but allow no inference as to the date of delivery, except that it has not been recent. The *os uteri*, in a woman who has been delivered once, or more than once, differs from its virgin state, in being more open, and having its margins irregularly notched, or even torn. Occasional exceptions to this statement are met with.

§ 27. In conclusion, it may be stated that the medical proof of recent delivery, from an examination of the living woman, cannot be established with perfect certainty after the lapse of a week or ten days, if the female have already borne children; if it, however, have been a first labor, the existence of the whitish streaks upon the abdomen, and the altered condition of the mouth of the womb, will afford strong suspicion of delivery having taken place at some former period, which cannot be more nearly determined.

§ 28. 2d. *Signs of delivery in the dead.*¹—These are extremely easy of recognition. It is evident that, in addition to the dilated and relaxed state of the vagina and vulva, the volume and capacity of the uterus, the thickness of its walls, the blood upon its inner surface, and the lacerated appearance of that portion of it to which the placenta was attached, are unmistakable signs of recent delivery. The uterus, after delivery, does not return to its former size until after the expiration of eight or twelve weeks, but will be found during

¹ As to identity, see *infra*, § 620, *et seq.*

this period still larger than before pregnancy, its walls thick and firm, but not vascular, although traversed by dilated veins, and the mucous membrane of the *os tincæ* softened, as if excoriated, vascular, and covered with mucus. The appendages of the uterus partake of the vascularity which characterizes it at the epoch of delivery, but they soon regain their ordinary aspect. The rate of return of the uterus to its normal size after parturition is irregular, depending upon its energy during labor, the period of pregnancy at which this process occurs, the occurrence of hemorrhage, etc., and consequently any attempt to infer from its condition the precise date of delivery must prove deceptive.

§ 29. 3d. *Corpus luteum*.—It has been supposed that the finding of a *corpus luteum*, or trace of a ruptured Graafian vesicle in the ovary, was introvertible proof of the previous existence of pregnancy. This opinion can no longer be maintained. The body which is found in the ovary, as the result of the rupture of a Graafian vesicle, indicates the escape of an ovum, but not necessarily the occurrence of impregnation. It has, indeed, been supposed that if a *corpus luteum* were formed in the ovary, this would be a reliable proof that fecundation must have occurred. This view is, however, not supported by the later investigations into the physiology of menstruation and reproduction.

§ 30. The fact is now, perhaps, universally admitted, that the maturation and expulsion of ova, probably at the menstrual period, or immediately after it, take place independently of all sexual intercourse. The act of expulsion or discharge necessarily involves a rupture of one of the Graafian follicles, and the locality is indicated by a *corpus luteum* and a cicatrix.

§ 31. The following is a description, by Dr. Dalton, of the *corpus luteum* found in the ovary of a girl who destroyed herself with oil of tansy, in the fourth month of pregnancy. The foetus was found in the womb. “The left ovary, which hung down a little lower than the right, had near its external extremity a small conical prominence, where the fibrous coat was wanting, and its place occupied by peritoneum alone. There was a very slight appearance here of a cicatrix, visible only on close inspection. There was no unusual vascularity here or at any other part of the ovary. Beneath this prominence the corpus luteum could be felt through the ovarian tissue, tolerably firm and well defined showing the form of a sphere compressed

laterally, much like that of the crystalline lens. On dividing the ovary longitudinally through the prominence, the corpus luteum was exposed. It presented nearly a circular section, measuring seven-eighths of an inch in its long diameter, and three-fourths of an inch in its short. It consisted externally of a convoluted wall of a dull yellow color, measuring at its deepest part a little over three-sixteenths of an inch in thickness. The space inclosed by the yellow wall was occupied by a colorless, reticulated, fibrous coagulum, which possessed a few minute vessels. This central coagulum was much compressed laterally, so that, although it presented a cut surface of about half an inch in diameter, it had hardly more than one line in thickness. There was no cavity or fluid anywhere. Both ovaries were carefully divided in every direction, but only one other body was found having any resemblance to a corpus luteum, and that was so small and imperfect as to be hardly recognisable. There were many Graafian vesicles in the interior of each ovary, varying in diameter from three-sixteenths of an inch downward, but none at all prominent on the surface. Both ovaries were quite healthy."¹

§ 32. The question of practical interest in inquiries relative to the fact of impregnation or delivery having occurred, is whether there is a sufficient distinction possible between the corpora lutea of simple menstruation and those of pregnancy to enable us to declare with *positiveness* to which cause it may be properly ascribed. It would certainly be a gratifying result of scientific observation, if this question could be answered in the affirmative.²

¹ American Journal of Medical Sciences, January 1852.

² M. Coste, in his splendid work upon Embryology, says, that during the first eight or ten days after the escape of the ovum, it is impossible to find any difference between the corpus luteum of menstruation and of pregnancy; after this period the first assumes a retrograde course, while the latter attaining a larger size than the other ever reaches, and becoming in every way more developed, remains stationary until about the end of the third month, at which time it begins to decline, and between the sixth and the ninth month has lost at least two-thirds of its volume; still occasionally it is completely absorbed before delivery. During the period of decadence, it is difficult to distinguish the corpus luteum of pregnancy from that of menstruation. M. Coste differs from Raciborski, Pouchet, and most other physiologists who have made researches upon this subject, in regard to the cause of the color of these bodies, believing it not to be due to an extravasation of the coloring matter of the blood, but to other causes which the reader will find fully explained in his work.—*Histoire générale et particulière du Développement des Corps organisés*. Paris, 1147.

§ 33. M. Longet¹ gives a concise and satisfactory description. He says: "We must distinguish *two kinds of corpora lutea*—those which result from the cicatrization of a follicle, after the spontaneous expulsion of an ovum, without any subsequent conception; and those which are produced by the same process, after the expulsion of an ovum followed by conception, and especially by gestation. Those belonging to the first class rapidly pass through their different stages, never attain a high degree of development, are much inferior to the others in size, rapidly assume a yellow coloration, fade again in a few days, and in the course of one or two months become retracted and completely concealed in the ovarian tissue. The second species of corpora lutea, participating in the congestion and functional activity, which are established in all the sexual organs during gestation, attain a size sometimes greater than that of the ovary itself, and pass so slowly through the different stages of their development and atrophy, that they are still perceptible at the termination of pregnancy; they gradually diminish in size, in proportion to the growth of the foetus, and the approach of the end of gestation."

§ 34. Dr. Dalton,² in his valuable monograph on this subject, says: "There can be no doubt that *in the first periods*, the corpus luteum follows the same course of development, whether the discharged ovum becomes impregnated or not. Together with the rupture of the vesicle the same effusion of blood takes place in either case, followed by a gradual absorption of the coloring matter of the clot, with hypertrophy and folding up of the membrane of the vesicle. When, however, the ovum becomes impregnated, and continues its growth in the uterus, the corpus luteum, instead of reaching its maximum of development at the end of three weeks, and afterwards undergoing a rapid process of atrophy, *continues to develop itself* for a considerable period, and does not, in fact, become very decidedly retrograde until after the termination of pregnancy." He states, moreover, that the yellow color of the *corpus luteum* of pregnancy fades more rapidly than that of menstruation in proportion to its size and the activity of the changes it undergoes.

¹ Physiologie. Paris 1850, vol. ii., p. 88.

² Prize Essay on the Corpus Luteum of Menstruation and Pregnancy, by John C. Dalton, Jr., M. D., published in the Trans. of the Am. Med. Assoc., vol. iv., 1851.

§ 35. Bishoff,¹ in a paper upon this subject, which with him was one of close investigation for many years, states that he had the opportunity of examining the ovaries in thirteen women who died while menstruating or in the pregnant condition. The results he obtained confirm the truth of the theory, that, at every menstrual period, a Graafian follicle ripens, swells, and bursts, and that, the ovum escaping, a corpus luteum is formed. Still, in ordinary menstruation, it never attains the full development which characterizes it when pregnancy exists. It rapidly becomes contracted, and at the succeeding menstrual period is already indistinct, and becomes gradually more and more so, the color changing from yellow to brown and black, and a puckered cicatrix on the surface of the ovary is soon the only trace of its existence. The *corpus luteum* of pregnancy, on the other hand, progresses steadily in its development, and attains a size never reached by that of menstruation. It lasts through the whole period of pregnancy, although diminished in size after the sixth or seventh month, and disappears after delivery. In the early periods, therefore, the difference between the two bodies is too slight to be relied upon ; after delivery it is still difficult to distinguish that of pregnancy from those of fourteen days' or three weeks' standing, resulting from menstruation.

§ 36. It is hence very plain, that, in the many cases in which the fact of impregnation having taken place is important to be known, we cannot rely with confidence upon the evidence derivable from the *corpus luteum*. We doubt, moreover, whether, in view of the still very conflicting opinions among physiologists in regard to the nature, origin, and diagnostic value of corpora lutea, positive statements derived from this source would be well received. While we feel persuaded that there is, as has been so well described by M. Coste and Dr. Dalton, a striking difference between these bodies in mere menstruation and pregnancy, yet it should not be forgotten that many of the most experienced anatomists and physiologists of the day have failed to recognise it. We beg leave to refer those of our readers who desire to learn in detail the state of knowledge on this subject, to Dr. Dalton's paper above quoted. In conclusion it may be added, as that admirable observer and microscopist, Mr. Wharton Jones, remarks, that "though *physiologically* one may be permitted to speculate on the relation between the occurrence of corpora lutea in the ovaries and

¹ Zeitschrift für rat. Med. Bd. iv. H. 1, abridged in Brit. and For. Med. Rev. April 1854, p. 561.

preceding coitus, it would be rash and unwarrantable in any one to pronounce positively from the occurrence of a corpus luteum in the ovary that coitus had taken place. The discovery of an ovum in the uterus, in process of development, could alone, in the present state of knowledge, warrant such an affirmation in a court of law. But, on the other hand, the absence of a corpus luteum could not warrant the affirmation that coitus had not taken place.¹ It is safe to affirm that the doctrine of the corpus luteum is not conclusively settled even at this late day.² Dr. Albert Puech³ concludes that the corpora lutea of menstruation and pregnancy are identical in origin, and that the latter attains its greatest dimensions in the third month of gestation, declining to one-half by the ninth month. On the other hand, Mayrhoffer⁴ argues against any such thing existing as a corpus luteum.

§ 37. 4th. *Feigned delivery*.—Delivery may be feigned from a variety of motives, into which it is not necessary for us to enter. A medical inspection can hardly fail to expose the deceit, and usually the collateral proof is sufficient. We have abridged the following case of feigned delivery, on account of the wonderful ingenuity with which the imposture was conducted. Dr. Albert relates that he was called upon to see a poor girl of twenty-one years of age in her last illness. In the presence of the physician and clergyman of the district, she gave the following narrative and confession. Some eighteen months previously she entered the service of a married couple as housemaid. Her master, who was young and handsome, and assumed

¹ Microscopical examination of an early *corpus luteum*. *Lond. Med. Gaz.*, 1844.

² Dr. W. T. Benham, in the *Edinburgh Medical Journal* for Aug. 1873, records the case of a young woman confined for some years in a lunatic asylum, at whose death an inspection revealed all the signs of virginity, while a highly developed corpus luteum existed in one ovary. Both the history of the case, and the post mortem inspection absolutely forbade the idea of her impregnation. Indeed the minute ovule of menstruation was found in the cavity of the uterus, thus contradicting the supposition that the development of the corpus luteum was in any way dependant upon that of the ovum. It is only necessary to add in this note that the statements in the text have received additional confirmation of late years, Casper and Kirkes, among others denying that there is any difference in the corpus luteum following mere menstruation and that which is accompanied by pregnancy.

³ *Gazette Obstetricale*. March 1875.

⁴ *Medizinische Wochenschrift*, 1876, Nos. 18 and 19. *Obst. Journal of Great Britain and Ireland*, 1876, p. 700.

the title of baron, had no children. He succeeded, by tempting presents, in overcoming her virtue. He then represented to her that an important inheritance depended upon his having an heir; but having been married five years, and his wife still proving unfruitful, he had no longer any hope of having children by her. He then proposed to the girl that in case she should prove with child, and would allow him to cause it to appear as his own legitimate offspring, he would not only give her a considerable sum of money, but would also let her remain in the house of her mistress, in order that she might be always near her child. She accepted the proposal, and as soon as she found herself to be pregnant the preparations were made to carry out the projected imposture. The girl remained in the house, living in the most retired manner, while her mistress played the part of a lady in an interesting condition. She introduced wool and folded napkins under her dress, and thus gradually let her rotundity become apparent, rubbed her breasts frequently, in order to develop them, fainted in church, was often ailing, and sent for midwives and consulted them concerning her symptoms; physicians were also called upon, and every means taken to make public her happy expectations, so that no one had any suspicion that she was not pregnant. The traces of her monthly sickness were carefully concealed.

§ 38. At last, in due time the young girl fell in labor, which was allowed to advance considerably before the midwife was sent for. In the meantime the bed was arranged in the following manner. A board was taken out of the bottom of the bedstead, and immediately above this opening a hole was made thorough the mattress and pail-lasse, large enough to allow the legs of a person to pass through and rest upon the floor. The bed was made in such a manner as to sink down towards the headboard, while it was elevated below the opening in the mattress. The mistress now leaned in a sitting position, with her legs through the opening in the bed, and supported against the headboard, while the servant lay across her lap on a feather-bed, in the attitude of labor. Her body was entirely concealed by the bed-coverings, which also concealed her mistress up to the neck. The midwife, upon her arrival, found the baroness, as she supposed, in the throes of labor; she made the necessary examination, promised a speedy deliverance, and gave the usual words of comfort. The lady, however, screamed lustily at every pain, the approach of which she became conscious of by the involuntary contractions of the poor

girl's body; while the latter suppressed her cries as much as possible, except when she could mingle them unperceived with those of her mistress. A living male child was soon born, and the after-birth followed it immediately. While the nurse was busy in washing and dressing the child in another room, the girl escaped from the bed into an adjoining chamber. The baroness, before the return of the mid-wife, drew her feet up from the opening, covered it over with the bed, and stretching herself out upon it, forbade the midwife (who was desirous of ascertaining her condition) to touch her, except to wash off the blood with which she had previously soiled her thighs, declaring that she was in so much pain that she could not endure the slightest touch. The child was baptized, and on the second day put to the breast of the lady. As, however, very naturally, it found nothing there, the midwife was discharged, on the pretext that the baroness's own attendant could now take care of the child, which, immediately upon her departure, was confided to its own mother. The remainder of the girl's history not being essential here, is omitted. Unexplained circumstances prevented the fraud from succeeding. The authors of the conspiracy fled, leaving the servant-girl sick and in a state of destitution. She died, from the effects of privation and exposure, shortly after having made this confession.¹

§ 39. Dr. Rüttel relates a case of pretended pregnancy and delivery, in which a girl, with the hope of persuading her lover to marry her, had stolen a child from eight to ten weeks old, and endeavored to pass it for her own. The fraud was easily detected from the entire absence of any signs of recent delivery, and from the child being evidently older than was consonant with her statement.² Where, as has in some cases happened, a child of the proper age has been substituted, the truth will be elicited by medical examination, or, where this cannot be obtained, the imposture is apt to be disclosed by some accidental or unforeseen circumstance.

¹ Henke's Zeitschrift, vol. xliv., p. 172.

² Id. Err. H. 31, p. 312.

CHAPTER III.

DURATION OF PREGNANCY.

§ 40. 1st. *Presumption that the child born in wedlock is legitimate.*—The rule in this country, as in England, is, that, when the husband has access to the wife, and the child is born within due time subsequent, no evidence, short of absolute impotence or indisputable absence on the husband's part, will justify a judgment of illegitimacy. The question of access, however, may be made to rest upon circumstances.¹ And among these circumstances may be taken proof of open cohabitation with another man, and repudiation by the husband's family of the alleged child.² When the marriage takes place when the mother is so far advanced in pregnancy that her situation must have been known by the husband, this will be considered a recognition of legitimacy.³

§ 41. 2d. *Protracted Gestation.*—(1) *Usual duration.* The duration of pregnancy in woman is, according to general medical and popular observation, about nine calendar months. Nine calendar months give a variable length of time, since they may contain either 273, 274, 275 or 276 days. Hence those who have thought precision was desirable have described the term of pregnancy as comprising ten lunar months, forty weeks, or 280 days. This, indeed, was the most ancient mode of reckoning.⁴ It is given by Hippocrates, was incorporated into the Roman laws, and is frequently alluded to by the Latin poets. The celebrated Harvey says: “Unquestionably the ordinary term of utero-gestation is, that which we believe was kept in the womb of his mother by our Saviour Christ, of men the most perfect; counting, viz., from the festival of the Annunciation in the month of March, to the day of the Blessed Nativity, which we cele-

¹ Com. *v.* Shephard, 6 Binn. 283. As to presumptions of legitimacy see more fully Whart. on Ev., § 1298, *et seq.*

² Com. *v.* Stricker, 1 Br. App. xlviij.; see Com. *v.* Wentz, 1 Art. 269; Stegall *v.* Stegall, 2 Brock. 256; Bowler *v.* Bingham, 2 Munf. 442; 3 Munf. 599, and cases cited, Whart. on Ev., § 1298.

³ Stegall *v.* Stegall, 2 Brock. 256.

⁴ See Whart. on Ev., § 1299.

brate in December. Prudent matrons calculating after this rule, as long as they note the day of the month in which the catemenia usually appear, are rarely out of their reckoning; but, after ten lunar months have elapsed, fall in labor, and reap the fruit of their womb the very day on which the catemenia would have appeared had impregnation not taken place."¹

§ 42. There is a remarkable correspondence between these views of the illustrious demonstrator of the circulation and those which are at present attracting attention. The idea has of late years been put forward and sustained by direct observation, that, in women whose menstrual function is regular, gestation will terminate at the tenth menstrual period after that upon which conception has ensued. Thus, as the ordinary menstrual interval is about twenty-eight days, the ordinary duration of pregnancy would be a few days less than 280 days, varying according to the time occupied by the monthly flow.² On this principle, the apparent difference among women in the length of their pregnancies might be explained by reference to the well-known variations in the length of the inter-menstrual periods; protracted gestation occurring in those having a menstrual interval naturally of more than twenty-eight days, and apparently premature confinements in those who menstruate at shorter intervals. The successful establishment of such a law would afford striking confirmation of the general truth of a popular belief reposing upon ages of experience. The greater tendency to abortion or premature delivery at the recurrence of the menstrual epochs, and the usual re-establishment of the menstrual function, within one month after parturition, in case the woman does not suckle her child, afford a presumption in favor of its correctness. Nevertheless, much additional and careful observation is required before we can be permitted to base a positive opinion in legal cases on such a mode of calculation.³

§ 43. (2) *Mode of reckoning.*—The discordance in medical testimony upon the subject of the natural duration of pregnancy and the

¹ Harvey's Works, Willis's Translation, p. 529.

² In a practical point of view, says Dr. Tyler Smith, we may consider that the average duration of pregnancy is about 280 days from the date of the last catamenia, or about 274 or 275 days from the time of coitus, when this can be ascertained. *Lancet*, Mar. 1856, p. 333.

³ *Vide* Cederschjöld; Schmidt's Jahrbücher, 1849; Suppl. Bd. pp. 323 and 394, also Shuster, Henke's Zeitsth. 1 H. pp. 1-97.

possible deviations from it, is accounted for by the want of a *fixed period* from which to date *its commencement*.

The *mode of reckoning* is various. Much reliance is placed by some women upon *peculiar sensations* experienced at the moment of conception. In some instances, they are no doubt thus enabled to calculate the probable duration of pregnancy with certainty. Dr. Reid¹ says, that he has occasionally met with cases in which this mode of fixing the exact time of conception proved, by the result, to have been correct; but that, in a much larger number of instances, the females were very considerably out in reckoning by trusting to this evidence. As a general rule, he says, “it will prove most fallacious, and in disputed cases of legitimacy it is of far too uncertain a character to rely on.” We may add, that these sensations are undefined in their nature, are unperceived by a great many women, have no necessary connection with conception, and, if referred to at a late period in the pregnancy or after delivery, the evidence must be utterly unworthy of consideration. Hence, in questions of *paternity*, the sensations alleged to have been perceived at the time by the woman cannot be regarded.

§ 44. (a) *Cause of conception*.—In an indictment for bastardy the mother will not be permitted to decide which of the connections about the same time was the operative cause of conception.² “The organs of conception, like those of digestion,” said Chief Justice Lewis, “perform their appropriate offices, without the volition of the female. She is not conscious, at the moment of the occurrence, of what has taken place. It is only by *inference* that she can fix the paternity of her offspring. If her intercourse has been confined to one individual, there is no difficulty in drawing a correct conclusion from the premises. But, if she has exposed herself to the embraces of several, at or about the time she became pregnant, she has placed it out of her power to draw any safe conclusions on the subject. Where causes are shown to exist, each of which is adequate to produce the effect, and there are no circumstances to determine the mind in favor of either, the true cause must necessarily remain uncertain.”³

¹ On the duration of Pregnancy in the Human Female, by James Reid, M. D., Lancet, 1850.

² Com. v. Fritz, 8 Penn. L. J. 43; Com. v. McCarty, 4 Penn. L. J. 140; Whart. on Ev., § 1299.

³ Com. v. McCarty, 4 Penn. L. J. 130.

§ 45. Another mode of calculation is from the *period of quickening*. In treating of the “signs of pregnancy,” we have already shown the fallacy to which any calculation founded upon this date is liable, since it may occur as early as the tenth week, as late as the twenty-sixth, or may never be perceived at all.

§ 46. (b) *Cessation of the catamenia*.—The mode of reckoning adopted by women themselves, as well as by their medical attendants, is usually from the *cessation of the catamenia*, or from a period midway between the last monthly discharge and its next expected recurrence. It is at once obvious that such a computation must yield merely an approximate result. If calculated beforehand, it may happen to prove correct, or it may either fall short of or exceed the actual duration. Conception may take place at any time in the interval between one menstrual period and another. Hence, by reckoning from the last occurrence of the catamenia, we may be in error by the whole length of menstrual interval—viz., 23 to 25 days—since impregnation may have been effected immediately before the anticipated return; or, on the other hand, the real duration of the pregnancy may be apparently shortened, by referring the impregnation to the end instead of the beginning of the menstrual interval. By adopting the common way of dating from midway between the two periods, the evil of falling into an extreme error is indeed avoided, but certainty is no better attained.

§ 47. (c) *Arrest of menstrual discharge*.—Another source of error lies in the *irregularity* of the menstrual function. If this continue to be performed during pregnancy, the female may become very much perplexed in her calculation. By dating from the complete cessation of the monthly discharge, she may make her pregnancy appear much shorter than it is in reality, or, on the other hand, add to its real duration by ascribing its commencement to some antecedent period at which she may suppose that she experienced the “peculiar sensations” above spoken of. In general, however, the mistake by which protracted cases may be accounted for depends upon the fact of the catamenia having been arrested by some accidental cause before impregnation occurred. The female is often sustained in her error by the appearance of symptoms not unlike those of real pregnancy, which are apt to ensue upon the arrest of the catamenial discharge. Thus a lady, mentioned by Dr. Reid, who had borne five children, and had never before had any stoppage of the menses, except when

pregnant, missed a period about ten months after the birth of her last child, which was at that time weaned, and naturally concluded that she was again *enceinte*; this opinion was confirmed by the second period also passing without any catamenial appearance. All the usual general symptoms of pregnancy occurred in succession, but, to her great surprise, she did not quicken as usual at the fourth month, and this occurrence did not take place until the supposed seventh month of her pregnancy. The infant was born exactly twelve calendar months after the last appearance of the menstrual functions. Dr. Reid remarks: "We may readily comprehend that, in this case, there was an accidental stoppage of the catamenia for three months, at which period conception took place. Fortunately, the apparently late period at which the movements of the foetus were perceived, but which, in reality, was the usual one at four months, corroborates the above fact."¹

§ 48. Although, when the duration of pregnancy is reckoned in this manner—viz., from the arrest of the monthly discharge—the calculation is subject to the errors indicated, which are again further increased by the sympathetic phenomena often ensuing upon the stoppage of the catamenia from other causes; yet it cannot be denied that there are cases thus reckoned which cannot be so explained. In the cases, for example, related by the late Prof. Simpson,² of Edinburgh, the actual enlargement of the uterus, corresponding to its usual size at the eighth or ninth week of pregnancy, was ascertained by manual examination at this period after the supposed commencement of pregnancy; and yet in one case the number of days which elapsed from the last menstruation to delivery was 336, and in the other, 332. Allowing an inter-menstrual period of twenty-three days (since the impregnation may have occurred only at its termination) the actual duration of pregnancy would have been, in each case, respectively 313 and 309 days, or at least 33 and 29 days in these two cases beyond the generally admitted limit. We might, indeed, to show that a manual examination is not always a reliable indication, adduce cases related by another distinguished author, in which it merely confirmed the female in her error. Thus Dr. Reid relates, that "A married

¹ For numerous illustrative cases, see Reid, *Lancet*, Sept. 1843, p. 236.

² Contributions to Obstetric Pathology and Practice, by J. Y. Simpson, M.D., Professor of Midwifery in the University of Edinburgh. Monthly Journal of Medical Science, July, 1853.

woman aged twenty-five, who had not seen her husband for eight months previously, having procured a letter for a lying-in hospital, was admitted into it, as labor-pains had continued for several hours. She had experienced all the usual symptoms of pregnancy, and the abdomen was much enlarged. She was examined by the midwife of the establishment and by the junior medical officer, and was informed that she was only eight months advanced in pregnancy, and not at her full term. After remaining three days in the hospital, as the pains had ceased, she left, but was recommended to come back immediately if the pains returned. As she continued perfectly free from them for the space of another month, she then applied to a physician for his advice, who referred her to me. On examining the patient, she did not present one single sign of pregnancy, except that the abdomen was somewhat enlarged, but the umbilicus was depressed and it was quite evident that she had never been pregnant." Nevertheless, we would be slow to believe that an accoucheur of the eminence of Dr. Simpson could have been deceived in supposing, in the cases referred to, that the developed size of the uterus was owing to the existence of pregnancy at the time of the examination. Yet we cannot fail to remind the reader that the recognition of pregnancy as early as eight or nine weeks after conception by the vaginal touch, and especially where, as in these cases of Dr. Simpson, "spurious pregnancy" had before existed, and there was, moreover, chronic inflammation and enlargement of the cervix uteri, is generally considered by authors to be, if not impossible, yet far from certain.

§ 49. The value to be attached to the opinions of accoucheurs upon the subject of protracted gestation depends naturally upon a consideration of the fallacies now enumerated. In many cases their only guide is the assertion of the mother, relative to the time of the supposed impregnation, the interruption of the menstrual discharge, and the period of quickening. In others, reliance is placed upon the degree of the enlargement of the womb; and in others, again, they are obliged to found their opinion partly upon the testimony of the mother and partly upon their own observation. An error in any of these elements for the formation of an opinion, will necessarily invalidate its accuracy; and hence, the testimony of an accoucheur as to his own experience, or that of a large number as to theirs, does not offer any security against error. If, for example, a physician should conscientiously believe and testify that he had witnessed a case

of gestation protracted to twelve months, the grounds for that opinion become a legitimate subject of examination. The sources of error have been shown, we think, to be such that it can hardly be in the power of any man to give an unqualified opinion of the duration of pregnancy in any given case, unless, perhaps, as we shall hereafter see, no more than a *single act* of intercourse has been possible. For this reason, testimony of the kind cannot become authoritative, the fallacies inherent in every mode of reckoning not being in the least diminished by the *number* of cases brought in evidence.¹

¹ The following is an abstract of the celebrated Gardner Peerage case, which came before the House of Lords in 1825; "Alan Legge Gardner, the son of Lord Gardner by his second wife, petitioned to have his name inscribed as a peer on the Parliament Roll. The peerage was, however, claimed by another person, Henry Fenton Jadis, who alleged that he was the son of Lord Gardner by his first and subsequently divorced wife. It was contended that the latter was illegitimate; and in order to establish this point, the evidence adduced was partly medical and partly moral. Lady Gardner, the mother of the alleged illegitimate child, parted from her husband on board of his ship, on the 30th of January, 1802. Lord Gardner went to the West Indies, and did not again see his wife until the 11th of July following. The child whose legitimacy was disputed was born on the 8th of December of that year. Therefore the plain medical question, taking the extreme view, was whether a child born 311 days (*forty-four weeks and three days*) after intercourse (from January to December), or 150 days (*twenty-one weeks and three days*), from July to December, could be considered to be the child of Lord Gardner. If these questions were answered in the affirmative, then it followed that this must have been a very premature or a very protracted birth. There was no pretence that this was a premature case, the child having been *mature* when born. The question then, was reduced to this: Was this alleged protracted gestation consistent with medical experience? Many medical witnesses, comprising the principal obstetric practitioners in the kingdom, were examined on this point. Their evidence was very conflicting, but a large majority concurred in the opinion that natural gestation might be protracted to a period which would cover the birth of the alleged illegitimate child. On the moral side of the question, it was clearly proved that Lady Gardner, after the departure of her husband, was living in open adulterous intercourse with a Mr. Jadis; and on this ground Lord Gardner obtained a divorce from her after his return. It was contended that the counter-claimant was really the son of Lady Gardner by Mr. Jadis. The decision of the House was, that this claimant was illegitimate, and that the title should descend to the son of the second Lady Gardner."—*Taylor's Medical Jurisprudence*, 6th ed., p. 634.

The decision in this case was based on the proofs of adultery, and not on the medical evidence. Had it depended upon the latter, it is doubtful whether it could have been given. The inability of the medical testimony to withstand

We will, therefore, not weary the attention of the reader by adducing the discordant opinions of accoucheurs upon this point, nor refer to isolated cases in which, upon insufficient evidence, the duration of pregnancy was considered to have been much protracted beyond the usual period.¹ Our object is, to ascertain what degree of precision is attainable for an opinion relative to the true duration of pregnancy, and within what limits it may fluctuate; the general principles thus obtained may then properly be applied to explain apparently exceptional cases.

§ 50. (d) *Statistical results.*—If we now, with this view, inquire into the *statistical results* obtained by the examination of a large number of cases of pregnancy calculated from the interruption of the cata-menia, we shall find that the errors to which this method is unavoidably exposed give a range to the possible duration of pregnancy which the most credulous will find it difficult to reconcile with ordinary experience. The results which we are about to quote are, according to the testimony of their authors, founded on the most reliable data. Yet it must be remarked, that these data are the statements of the women themselves. An amusing instance is related by Dr. Reid, of an expert midwife, who, when examined in the celebrated Gardner peerage case, deposed that she had once gone ten months with child, that she was always right in her calculations, that she always fainted away at quickening, etc., so that she could not be deceived. Some time after the trial she applied to Dr. Reid, convinced, on such grounds, that she was seven months pregnant. It proved, however, on examination that she was not pregnant at all.

§ 52. Dr. Murphy has published tables founded upon a registry of the cases observed in the obstetric practice of the University College Hospital for 1844. These tables are made up from the data furnished by the women themselves. The errors to which we have referred as inherent in the ordinary modes of calculation must therefore impair the value of the results obtained, and no precautions can entirely eliminate them. In addition, the class of patients furnishing these statistics the sifting examination of the Attorney-General, fully bears out the statements in the text. (*Vide Medical Evidence on the Duration of Pregnancy, with remarks and notes by R. Lyall, M.D., 2d ed. London, 1827.*)

¹ Several cases of alleged protracted pregnancy are reported by Mr. Annan, Edinb. Med. Journ., ii. 712, and Dr. J. M. Duncan, Id. p. 967. Dr. Buzzell, of Mass., met with a case in which the dead foetus was retained in the womb for twenty-two months after full term. (Boston Med. and Surg. Journ., June, 1860, p. 400.)

tics should not be lost sight of. Now, with reference to hospital and dispensary practice, it may be observed that the class of women who are the recipients of charity from these institutions can seldom give an accurate account of the date at which they suppose their pregnancy to have commenced, but fix it in their own minds in connection with some domestic or other occurrence which happened about the same time. "With the low orders of Irish," as Dr. Reid justly remarks, "dates on all subjects appear to be totally out of the question, or they are located merely by a recollection that the occurrences took place somewhere near to St. Patrick's day, Boxing day, Christmas, etc. If they think that a decided answer will please, it is often given simply as the result of a wish to effect this object." In order to obviate the errors arising from such sources, as far as possible, this last author was obliged to erase several hundreds of cases from his tables as doubtful, and finally included in his list of 500 cases only 50 from hospital and dispensary practice, the rest being private cases. Yet, with all these precautions, we find that in one case, where gestation was apparently prolonged to the 314th day, it was noted that quickening did not happen until the sixth month, proving, as he himself says, that conception had taken place later than had been thought. "Had minute investigation been made, at an early period, into the remaining five cases which went beyond the forty-fourth week, it is most likely that some similar facts might have been observed." The tables of Drs. Merriman, Murphy and Reid have been condensed by Prof. Simpson into the table which will be found below, and which the reader will also find in the paper by Prof. Simpson already quoted.¹

TABLE.

Dates of Delivery, calculated from the last day of Catamenia.

| Week. | Days. | Merriman. | Murphy. | Reid. |
|----------------------|-----------------|-----------|---------|-------|
| 37th | From 252 to 259 | 3 | 12 | 23 |
| 38th | " 260 to 265 | 13 | 14 | 48 |
| 39th | " 267 to 273 | 4 | 27 | 81 |
| 40th | " 274 to 280 | 33 | 28 | 131 |
| 41st | " 281 to 287 | 22 | 39 | 112 |
| 42d | " 288 to 294 | 15 | 21 | 63 |
| 43d | " 295 to 301 | 10 | 25 | 28 |
| 44th and upwards . . | " 302 to 326 | 4 | 2 | 84 |
| | | 104 | 168 | 570 |

¹ See ante, § 48.

The total number of cases here reported is 782, of which 355, or nearly one-half, went beyond the 280th day, up to the 326th day. If we take the number that went beyond the 274th day, there will be 547, or more than *two-thirds* of the whole number of women in these reports whose pregnancy lasted longer than what has been considered the average duration of this condition.

This astonishing result would be still more striking if we refer to Dr. Murphy's tables alone. In them there are fourteen cases not included in the foregoing table, because delivery took place before the 37th week—viz., 5 in the 33d, 3 in the 35th, and 6 in the 36th week. Dr. Murphy comes to the conclusion that 301 days is the *average limit* of gestation! Two of his cases attained the extreme period of 342 and 352 days respectively, from which, if we subtract the intermenstrual period of twenty-three days (not 28 days), we shall still be left with a protracted pregnancy of 314 and 324 days, dating from the first suspension of the catamenia.

With all the sources of error we have indicated, and with the ludicrous results issuing from the assemblage of so-called facts in the above table, what inference, it may be asked, can be drawn relative to the laws regulating the duration of pregnancy?

§ 53. Before replying to this question, let us look at a class of cases which afford less room for error. We refer to those where there has been but *one act of intercourse*.

In this, as in all other questions affecting female chastity or continence, the evidence is always open to objection, even where there is no apparent motive for deception. Nothing is more common than for an unmarried female in a pregnant condition to acknowledge one single act of weakness, while the suggestion of its having been repeated is indignantly denied. Indeed, to use the expression of a German author, the acknowledgment of a solitary transgression is usually accompanied with a protestation of its having been as little a sin as was possible under the circumstances, just as the woman who confessed to bastardy defended herself, according to Fielding, on the ground the child was "little." However much, in individual cases and with plausible concurrent testimony, we may be inclined to favor the statement of a female in so unfortunate a position, it is, nevertheless, incumbent upon us, in our endeavors to ascertain the existence of a natural law, to look upon the material before us solely in a scientific light, and examine and judge it accordingly. The possibility

of error, therefore, from misstatements upon the part of the female, cannot be lost sight of.

§ 54. An additional source of error, even in the best authenticated cases, lies in determining the *moment of conception*. This, we do not hesitate to affirm, is altogether impossible. So far from conception being always coincident with insemination, as was positively affirmed in the evidence in the Gardner peerage case, experiments upon animals, and observations made upon the human subject, have now shown that a more or less extended interval may elapse between the sexual congress and the conception which follows it, when fruitful. Without entering upon this physiological question, which would lead us into a misplaced discussion, it may be stated without any fear of denial—

1st. That the *ovum* occupies from eight to ten days in its passage from the ovary to the uterus;

2d. That the seminal fluid may retain its fecundating properties in the genital passages for several days;

3d. That conception may take place at any time in the menstrual interval; and,

4th. That, therefore, any calculation based simply upon the date of sexual intercourse may cause the duration of pregnancy apparently to exceed by a few days the normal period.

§ 55. Nevertheless, in the absence of any more precise method of determining the day of conception, we must content ourselves with that which approaches it most nearly, and, making due allowance for errors arising from moral causes, accept as good evidence those cases reported as dating from *a single coition*. Other cases have, indeed, been reported, in which the intercourse was alleged to have taken place but once; but we have rejected all such in which the woman's asseveration could fairly be called in question. In doing so, we have been influenced by no other motive than a desire to attain the truth, convinced that this could only be done by a strict preliminary analysis of each case, in reference to the credibility and standing of the witness, her motives for self-deception or interest, as well as the position and reputation of the reporter.

In the following table, we have placed together all the genuine cases, of this kind, which we have been able to collect. They amount to fifty-six, and are reported by various authors mostly from their own observation.

TABLE
Of the duration of Pregnancy, as dated from a single intercourse.

| Days. | Reid. | Raciborski. | Rigby. | Lockwood. | Beatty. | McIlvaine. | Montgomery. | Desormeaux. | Merriman. | Girdwood. | Skey. | Anderson v. Whittaker. | Lec. | Deweess. | Total for each date. |
|-------|-------|-------------|--------|-----------|---------|------------|-------------|-------------|-----------|-----------|-------|---------------------------|------|----------|-------------------------|
| 260 | ... | ... | I | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| 263 | I | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| 264 | I | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| 265 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| 266 | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| 268 | ... | 1 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| 270 | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| 271 | 2 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| 272 | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| 273 | I | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| 274 | 6 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8 |
| 275 | 2 | I | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 3 |
| 276 | 3 | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 5 |
| 278 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| 280 | 2 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 3 |
| 281 | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | 2 |
| 283 | ... | ... | ... | 1 | ... | ... | 1 | ... | 1 | ... | ... | 1 | ... | ... | 2 |
| 284 | ... | ... | ... | 1 | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | 2 |
| 286 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | 2 |
| 287 | 1 | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | 1 | ... | ... | 4 |
| 288 | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 |
| 289 | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 |
| 291 | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 2 |
| 296 | 1 | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | 3 |
| | 25 | 5 | 3 | 4 | I | 1 | 7 | 1 | 3 | I | 1 | 1 | I | I | 56 |

Average, 276 days.

§ 56. In the last edition of Dr. Montgomery's work above referred to, he furnishes a table of the duration of pregnancy in fifty-six cases "in which the day of fruitful intercourse was known." We have calculated the average duration of pregnancy in these cases and find it to be nearly 276 days, a result which agrees with and confirms that of the table already given. It does not differ materially from the conclusions of Elsässer from an analysis of 260 cases.² But it is

¹ Dr. Reid, Lancet, 1740, vol. ii.; Raciborski, *De la Puberté*, etc., p. 460; Rigby, *System of Midwifery*, p. 84; Lockwood, *Am. Journ.* Dec. 1847; Beatty, *Dub. Med. Journ.*, vol. viii.; McIlvaine, *Am. Journ.*, 1848; Montgomery, *Signs of Pregnancy*; Desormeaux, *Dict. de Med.* vol. x.; Merriman, S. W. J., *Taylor's Med. Jur.*, Am. ed. p. 399; Girdwood, *Lancet*, Dec. 1844; Skey; Anderson v. Whittaker (in Reid's Paper, loc. cit.); Lee, *Med. Gaz.* 1831; Dewees, *Midwifery*.

² Henke's *Zeitschrift*, lxxiii. 394.

most important to bear in mind that the average number of days of gestation in any series of cases by no means represents the duration of the greater number of those very cases. For while in the table above given 276 is the average number of days of gestation, five cases only terminated on the 276th day, eight did so on the 274th day, four on the 287th, etc.

§ 57. M. Aubinais¹ relates the following, which certainly militates against the views of those who maintain the occurrence of prolonged gestation. Two sisters, of irreproachable virtue, were married to sailors on the same day. The husbands were ordered away to join their ships the next morning at 6 A. M. On the 264th day following, both sisters were brought to bed at almost the same hour.

The result yielded by the foregoing table brings down the average duration of pregnancy much below the exaggerated estimate of some authors, below even the conceded average of many accoucheurs, but places it in remarkable harmony with the prevailing popular and medical belief. Two hundred and seventy-six days are included in nine calendar months; and, according to these calculations, represent the average duration of pregnancy from a single sexual act.

§ 58. Such appears to be the only result attainable at the present time. Without giving positive certainty to our knowledge respecting the law governing the duration of pregnancy, it renders the probability of error in other modes of investigation than that based upon the foregoing principles stronger than it can by any arguments be made to appear. In other words, it proves that the *apparent* variation in the length of the term is greater than the *actual*. Although not affording us any reason to consider the normal period to be a fixed one, from which there is really no departure, it nevertheless reduces the excess within reasonable bounds.

§ 59. That a deviation from the normal period is possible, is evident not only from the instance we have quoted, but is also sustained by observations upon certain domestic animals. Even here it is necessary to premise that there are sources of fallacy. The analogy between the functions of menstruation in the female, and the period of sexual excitement in the cow, mare, etc., is far from being well established, although some late authors have assiduously endeavored to maintain that it is real. Hence the entire impossibility of knowing when conception occurs in them. Moreover, some of these animals will not

¹ Phila. Med. Times, vol. i. p. 147, from Journ. de Méd. et de Chirurg.

refuse the male, although already pregnant, and therefore the origin of the pregnancy may not be dated far enough back. This is the case with the cow.

§ 60. Prof. Krahmer,¹ whose observations we cite below, gives examples of this. Thus, "No. 105" took the bull on the 2d of May and on the 23d November, 1815; she calved on the 17th of February 1816; *i. e.*, 296 days from the first covering, and 86 days from the second. "No. 42" took the bull the 30th November, 1808, and again 31st March, 1809; she calved 7th September, 1809; *i. e.*, 281 days after first, and 160 days after second covering. Another case is mentioned in which a cow was slaughtered on account of this propensity, and was then found to have been some time with calf.

Lord Spencer² published, some years since, the result of seven hundred and sixty-four instances of the gestation of cows. The average term he found to be 285 days. Three hundred and fourteen cows calved before the 284th day, and three hundred and ten after the 285th. At 284 days, sixty-six calved; and at 285 days, seventy-four. Few cases exceeded the period of 285 days more than five or eight days; eight only exceeded it by more than twelve days; and one only went to the eighteenth day beyond it. According to M. Tessier's observations, the excess above the average period, in one hundred and two mares and one hundred and sixty cows, was from fifty-seven to sixty days in the former, and thirty-two to thirty-five in the latter.

§ 61. The most recent and extensive researches on this subject are those of Professor Krahmer, of Halle. His observations were made on sheep and cows. Every precaution was taken to insure accuracy, each individual in the flock or herd having been marked when heat appeared, then separated therefrom and allowed access to the male. The days of covering and of the birth of the young were registered. Among the sheep, the birth fell on the following days:—

| 2 fell on the 145th day. | | 7 fell on the 153d day. | |
|--------------------------|-----------|-------------------------|-----------|
| 4 | " 146th " | 3 | " 154th " |
| 11 | " 147th " | 1 | " 155th " |
| 14 | " 148th " | 1 | " 159th " |
| 38 | " 149th " | 1 | " 166th " |
| 44 | " 150th " | 1 | " 168th " |
| 31 | " 151st " | 1 | " 169th " |
| 18 | " 152d " | 1 | " 171st " |

¹ Beiträge zur Lehre von der Schwangerschaftsdauer, Henke's Zeitschrift, 1849, I. H. p. 98.

² Journal of the Agricultural Society, as quoted by Reid, Beck, and others.

If the average of these 177 births be calculated, it will be found to be 150, and yet only one-fourth of the whole number really fell on the 150th day. Thus the probability appears to be, that of four ewes only one will drop her lamb at what may be considered the normal term of gestation in the sheep.

§ 62. The only number of cows observed was 1105: the observations covering a space of twenty-six years, viz., from 1808 to 1832, and including fifty-five in 1847. The average duration is stated at 282 days; but the tables of Dr. Krahmer include no less than forty-six births before the 260th day, which ought certainly to be looked upon as premature. Leaving these aside, the average would probably be increased by a day or two. Stated in weeks, and neglecting forty-six births before the 38th week:—

| 12 cows calved in the 38th week. | | | | 21 cows calved in the 44th week. | | | |
|----------------------------------|---|---|--------|----------------------------------|---|---|--------|
| 72 | " | " | 39th " | 9 | " | " | 45th " |
| 335 | " | " | 40th " | 3 | " | " | 46th " |
| 429 | " | " | 41st " | 5 | " | " | 47th " |
| 135 | " | " | 42d " | 4 | " | " | 48th " |
| 33 | " | " | 43d " | 1 | " | " | 51st " |

§ 63. If the argument from analogy be admissible, the fact may be considered as well established, that pregnancy is a condition which may occasionally exceed the normal limit for its duration; but the limit to this excess cannot, in the present state of physiological science, be accurately known. It is undeniably, however, that the greater the amount of deviation the more authentic and convincing should be the proof required of its actual protraction. The suggestion has, indeed, been made, that the development of the child might afford a key to the extent of the protraction; but facts derived from this source rather militate against than for its reality. In most of the cases in which a child is supposed to have been carried beyond the usual period, it has not attained a greater size than is met with in ordinary cases. Sometimes, indeed, it has been rather smaller than the average. If we could admit that pregnancy ever attained the period of twelve, fourteen, or sixteen months, as has been asserted, there is no reason why the child should not have continued to grow to a size incompatible with its being born alive. The supposition, that after nine months it ceases to grow, is an assumption unwarranted by analogy or reason, and put forward only with the hope of maintaining a foregone conclusion.

§ 64. While, therefore, we admit the occasional prolongation of

pregnancy beyond its usual limit of 276 days, to the extent of perhaps four weeks, we cannot venture, with such fallacious evidence as often serves as the basis of the calculation, to accept, as authentic, those instances in which it has apparently been prolonged beyond this time. The following case quoted by Dr. Reid, from Bartholin, will form a fitting conclusion to these remarks.

"A young girl of Leipsic, of doubtful character, accused a young man, who was rich, of having impregnated her. The magistrates acceded to the request of the friends of the accused, and had the girl confined in prison, and kept under proper surveillance. She was not delivered until after the sixteenth month; but the foetus was very small, and lived only two days, being imperfectly developed. This case was adduced as a very strong instance of protracted gestation, the young woman being so strictly watched by the keepers of the prison as to preclude all chance of impregnation whilst there. The undeveloped condition of the foetus, however, is a sufficient proof against a sixteen months' gestation, and as to the chance alluded to, we may simply ask—

'Sed quis custodiet ipsos custodes?'"

• § 65. We have endeavored, in this chapter, to show how far the actual duration of pregnancy is capable of *demonstration*, and have, therefore, forborne introducing into the discussion any arguments not based upon direct observation of the phenomena of gestation in man or animals. It is not unusual, however, with writers in discussing this subject to allege, in proof of the really variable and uncertain limit of this process, that nature is never restricted in her operations within precise and well-defined limits. This argument is presented with great clearness in the following pages, containing Judge Lewis's opinion in the case of *Com. v. Hoover*. We connot, however, refrain from reiterating the opinion that the seeming analogies of nature cannot for a moment be adduced in opposition to the facts of physiological science.

§ 66. 3d. *Legal decisions*.—The following decision on the duration of pregnancy deserves especial weight from the character of the learned Ch. J. of Pennsylvania, by whom it is reported as well as decided.

At a special court of Quarter Sessions of Lycoming county at which Judge Lewis presided, the following instructions were given in reference to the count for fornication and bastardy: "If you believe from the testimony of John Reibsam, that the prosecutrix had submitted to

improper connection with the witness, *about the time when the child was begotten, this circumstance destroys her competency as a witness to prove that the defendant is the father of her child.* The organs of conception, like those of digestion, perform their appropriate offices, without the volition of the female. She is not conscious, at the moment of the occurrence, of what takes place. It is only by *inference* that she can afterwards fix the paternity of her offspring. If her intercourse has been confined to *one* individual, there is no difficulty in drawing a correct conclusion from the premises. But, if she has exposed herself to the embraces of several, at or about the time she became pregnant, she has placed it out of her power to draw any safe conclusions on the subject. Where two causes are shown to exist, either of which is adequate to produce the effect, and there are no circumstances to determine the mind in favor of either, the cause must necessarily remain uncertain; and in that case there is not sufficient evidence to justify a conviction."¹ In trials for this offence, the defence is frequently rested upon the period of time which elapses between the alleged criminal connection and the birth of the child, in cases of material departures from the usual period. In a case of this description, Com. v. Hoover, the President of the Court of Quarter Sessions, of Lancaster county (Lewis) gave the following charge to the jury: Com. v. Elisha F. Hoover. "The defendant is indicted for fornication and bastardy. The prosecutrix, Catherine E. Rife, is a competent witness, but her credibility is for the jury. According to her account, the child was begotten on the 23d of March 1845. It was born on the 30th of January 1846; a male, fine, large and healthy. The period of gestation was 313 days. It is conceded that the defendant had no intercourse with the mother after the 23d of March 1845, and the time of delivery is fixed with equal certainty. A question of science has arisen, respecting the possibility of protracted gestation. The usual period is nine calendar months, or 273 or 275 days. What has been denominated the *extreme* of the *usual period* is 280 days, or ten lunar months. But whether any, and, if any, what longer time may be allowed as possible, are the questions which this case presents for decision. Medical writers of celebrity and authority are arrayed on both sides of these questions. And the medical witnesses upon the stand are in like manner divided in opinion. In

¹ Com. v. McCarty, 3 Penn. L. J., p. 140; and see Whart. on Ev., § 1299.

constructing this evidence, so far as respects the *facts* narrated by each, it is proper to consider that writers and witnesses are respectively relating only the results of their own knowledge; and when one states that no case of protracted gestation has fallen under his observation, it is but negative testimony, and cannot justly be relied upon to invalidate the negative evidence of others, equally entitled to credit, who enumerate cases of the kind, which they positively affirm to have come within the range of their practice and knowledge. In the most familiar transactions of life, witnesses will differ in their narration of circumstances. In narrating a simple assault and battery, the bystanders frequently vary in their statement of the facts. Some narrate incidents which others omit. Conceding all the witnesses to be equally worthy of credit, the rule is to reconcile their evidence so that all will stand consistently together, if this be reasonably practicable. Some witnesses observe circumstances which others have not seen. Negative evidence is therefore deemed insufficient to outweigh affirmative statements from witnesses equally entitled to credit. One gentleman, in a very long course of practice, may have failed to observe any case of the kind. Another, in a very brief period, may have noticed several. And it is reasonable to believe that where such a diversity of opinion exists, each will be in some measure influenced by his own professional experience, and that this will also, to some extent, affect his belief in the cases reported by others. There are, doubtless, many of these cases where the struggle for character and property, and the circumstances of the parties whose interests have been involved, have furnished temptations to falsify, and may have influenced the decisions of the tribunals. But, after making all proper allowances for cases of this description, the whole evidence on the question, when fairly considered, appears to show that cases of protracted gestation are not impossible, although their existence is very unusual. The heads of wheat in the same field do not all ripen together. The ears of corn on the same stalk do not all come to maturity at the same time. Even the grains of corn on the same ear ripen at different periods. The fruit on the same tree shows a like deviation. A portion will ripen and fall, while other portions remain comparatively green upon the parent stalk. The eggs of the fowl, under process of incubation at the same time, are subject to the same variation. In quadrupeds, if the testimony of M. Tessier be believed, we have proof of the like irregularity. Whatever may be the causes operating in each case to divert nature

from her accustomed course, to accelerate or delay her usual progress, the human species, like the rest of creation, seem occasionally under their influences. The developments of puberty, although generally shown at a certain age, are far from regular. Some individuals approach it earlier, others later in life. Intellectual maturity is subject to like irregularities. Some are precocious, others astonishingly tardy in arriving at the usual degree of discretion. The intervals between the catamenial visits, although in general regular and fixed, exhibit remarkable deviations. Their final departures, although generally to be expected at a certain age, are as irregular as their first approaches, and as subject to variations as were their periodical returns. A certain period of life has been usually assigned for the terminations of a mother's perils, but the instances of extensive deviations from this general rule are numerous and well established. The gestation of one child at a time is according to the usual course of nature, but the birth of twins, triplets, etc., furnish indubitable proofs of astonishing departures from the usual course. The sensations of the mother, produced by the elevation of the foetus from the cavity of the pelvis (called quickening), although usually occurring at a certain period, are known to be subject to the like departure from the usual time. It has been said that human life does not generally extend beyond seventy years. But if this be the general rule, the departures are numerous. The most distinguished jurist perhaps now living in the whole world (Chancellor Kent) will be eighty-three years old on the first of July next; and yet, within a few days, I have been honored by the receipt of a letter from him, under the date of the 18th instant, in which he states that he is still in good and active health, that his relish and ardor for studies and legal learning continue unabated, that he has the blessing of good eyes, and that he is still an observer of what passes with lively sensibility. This instance may serve to illustrate not only the occasional deviations from the general rules respecting the duration of human life, but the like variation in respect to intellectual vigor, by which one individual attains a pre-eminence over the generality of mankind. All nature abounds with occasional departures from her general customs. Even the compass, which guides the mariner on the trackless ocean, which enables science to fix with reasonable certainty the boundaries of kingdoms and farms, and the truthfulness of which to its accustomed law has been perpetuated by a proverb, is subject to

mysterious but acknowledged variations. From analogy, and from the statements of distinguished authors and eminent witnesses, after making every allowance for mistakes and the operation of unfavorable influences, we are led to the belief that although nature delights in adherence to her general usages, she is occasionally retarded in her progress, and otherwise coerced, by causes not always apparent, into extensive deviations from her accustomed path. And we are induced to believe that protracted gestation for the period of 313 days, although *unusual* and *improbable*, is not *impossible*. The evidence to establish the existence of such a considerable departure from the usual period should be clear, and free from doubt. The witness should possess a character beyond reproach, and her testimony should be consistent and uncontradicted in all material facts. If the jury are satisfied that the evidence for the commonwealth is of this character, the unusually long period of gestation does not require them to disregard it. The law fixes no period as the *ultimum tempus partendi*. The *usual* period has been stated, but longer time may be allowed, according to the opinions of the physicians and the circumstances of the case. The question is, therefore, open for the decision of the jury. If they believe the witness, they may find the defendant guilty." The jury found the defendant guilty. The prosecution was conducted by Messrs. Frazer and Mathiot, and the defence by Mr. Stevens. The case is fully reported in the *American Journal of the Medical Sciences*, No. 24, new series, Oct. 1846, p. 535, accompanied with a communication from Professor Atlee, in which he mentions two cases within his own practice where the period of gestation was about a year.¹ This latter period has received the sanction of the legislature of Pennsylvania as the longest period of indulgence which the law allows to a married woman who has a child in the absence of her husband. If she cannot show that he was in her company, or was within the colonies between the easternmost parts of New England and the southernmost parts of North Carolina, within twelve months next before the birth of the child, she is deemed an *adulteress* under the 4th section of the act of 1705.

§ 67. 4th. *Early viability*.—From the uncertainty which attends the establishment of the date of conception, and from the unequal development of the foetus in different cases at different periods of

¹ Amer. Journ. of the Med. Sciences, Oct. 1846, p. 535.

gestation, the difficulty of knowing the actual age of an immature child is often very great. When born at the eighth month, the weight and size do not differ materially from what is often met with at maturity, but yet there are marks of imperfect development which are generally conclusive as to its immaturity, and which enable us to judge that but a few weeks were wanting to complete the development. (*Vide ABORTION.*) Thus, at the *eighth* month its length is only two or three inches, and its weight one to two pounds below the average. The pupillary membrane has disappeared, the testicles are found in the internal abdominal ring, and the middle point of the body is nearer the umbilicus than the sternum. In the foetus, at *seven* months, however, the length hardly exceeds a foot, nor its weight four pounds. Children born at this age are often reared, if they have not been neglected. There can be no possibility of mistaking a foetus of seven months for a mature child, while this error might readily be made with one at eight months.

§ 68. The most important epochs, however, relative to questions of viability and paternity are the *fifth* and *sixth* months. A great discrepancy will be found in the statements of authors as to the weight and length of the foetus in these months. The weight of a six months' foetus is, for example, set down by Burns, Hamilton and Devergie at one pound, and by Maygrier at two pounds; while the last-mentioned writer states its length to be twelve inches, the others make it from eight to ten inches. The length of a five months' foetus is usually considered to be from six to seven inches, but Maygrier and Sömmering allow as much as ten inches. In forming an opinion, therefore, as to the exact age of a child between the fifth and seventh month of uterine life, this variation in the estimates, by different authors, should inspire caution and reserve. It is better to acknowledge the impossibility of certifying the exact age, than to attempt to give precision to a point incapable of receiving it.

§ 69. The period mentioned may be regarded as the debatable ground relative to the viability of the child. Mr. Whitehead says, that when abortion takes place before the *end* of the *sixth* month, it is invariably fatal to the offspring, either before birth or in a short time after, and at any period before the completion of the full term, it is more or less injurious to its well-being. Instances are, however, on record which disprove the correctness of this statement.

Dr. Erbkam, of Berlin, has reported a case in which a foetus only six inches long, and weighing eight ounces, was born alive, and survived half an hour. It moved its arms and legs, turned its head from side to side, and opened its mouth. The action of the heart continued after all other movements had ceased. The child was shown to the celebrated Müller, who expressed the opinion that it was not more than *four* months old.¹ A case, which is remarkable, and of great interest, on account of the accuracy with which the date of impregnation, and therefore the true age of the child, was ascertained, is reported by Dr. Barrows, of Hartford. Mrs. J—— miscarried on the 18th of May; her lochial discharges were profuse and long continued. Dr. B. was called to prescribe for her on the 18th of June, when she had increased vaginal discharge, probably the menstrual flow; this continued for a week or two, before it wholly subsided. She went from home, on the 27th of June, to spend some days in the country, and at this time she first indulged in sexual intercourse subsequent to her miscarriage. On the 18th of November, in consequence of over-exertion, she again miscarried. Dr. Barrows attended her on this, as on the previous occasion. The ovum was expelled entire. The sac contained at least two pints of fluid. "The membranes were not ruptured for some little time, during which the movements of the child were active and vigorous. On rupturing the membranes, and exposing the child to the air, it instantly gasped, or, perhaps I ought rather to say, uttered a cry so loud as to be heard distinctly at a distance of several feet, it being at the same time covered with the bedclothes. The cord was tied on its ceasing to pulsate, at the end of two or three minutes, then separated, and the child wrapped in warm flannels. As it continued to manifest the ordinary appearances of life, its condition was watched with much interest and care. It breathed with a kind of convulsive gasp at intervals of one or two minutes, for a period of forty minutes. The heart beat regularly for forty-five minutes. * * * The child repeatedly opened its mouth, and thrust forward its tongue." It measured (it was a female) *ten* inches in length, and weighed *fourteen* ounces. The integuments were, for the most part, firm and of a light color; the portion covering the abdomen was thin, and of a reddish hue. The hair of the head was like down, the rudiments of

¹ Am. Journ. Med. Sci., 1838, p. 244.

the nails were plainly discernible, and the iris was entirely closed by the *membrana pupillaris*. The head was tolerably firm, but the frontal and parietal bones were imperfect, and widely separated.¹ Dating the first intercourse after the previous miscarriage, the age of this child was 144 days, or less than five calendar months. There is nothing in its size, weight, and development, as reported, inconsistent with the mother's reckoning and the facts related by her physician.²

§ 70. Another case, in which a living child was born on the 179th day, is interesting from the fact that the child lived four months, and then died of an epidemic disease. When born, it was so feeble that it was not thought possible that it could live. Its cry could be heard only at a few yards' distance; it had no nails, its hair was downy, its skin florid and thin, and its extremities imperfectly developed. The bones of the head were soft and easily compressed, and the sutures wide. The pupillary membranes were entire. It was placed near the fire, in a basket, wrapped in soft cotton. It could not suck, but milk was dropped into its mouth through a quill. Forty days after birth it was found to be thirteen inches long, and weighed three pounds. The centre of the body was nearly an inch above the umbilicus.³ A somewhat similar case, is that of Dr. Barker, of Dumfries, in which the child was born on the 158th day of gestation; it weighed one pound and measured eleven inches. Three years and a half afterwards it was still living, and weighed twenty-nine pounds and a half.⁴

§ 71. In the case related in great detail by d'Outrepont, of Bamberg, a child which was not more than twenty-seven weeks, or six months old, when it was born, was still living at the age of eleven years. It was not larger at that time, however, than a boy of eight years.⁵ Another curious instance, in which the life of a very premature child was preserved, is narrated by Dr. Rodman, of Paisley. The child's uterine age could not have been more than five months, since, three weeks after birth, it weighed only one pound thirteen

¹ Am. Journ. Med. Sci., April, 1853, p. 380.

² As to infanticide, *infra*, § 860.

³ Lancet, April, 1852.

⁴ Med. Times, Sept. and Oct. 1850.

⁵ Henke, Zeitschrift, vol. vi.

ounces, and measured between eleven and thirteen inches. It survived its birth one year and nine months.¹

§ 72. Nothing need be said upon the possibility of premature development, except that it is not sustained by any authentic facts, and that it is disproved by daily experience, which shows that the foetal development is regular and progressive, except when retarded or arrested by disease. That a child can anticipate, as it were, its maturity, acquiring, *e. g.*, at six or seven months the development it obtains usually only at nine, is far more difficult to credit than that the mother or her physician should be mistaken in their reckoning. In our remarks upon protracted gestation, we have exposed the difficulty, not to say impossibility, of fixing the date of fruitful intercourse or of conception, and the mistakes which the female is apt to commit by the ordinary manner of calculating the duration of pregnancy. Those remarks are equally applicable here, and perhaps, indeed, more so; for if it is rare to find the child at the close of a seemingly protracted pregnancy overmature, it is still more contrary to experience that a foetus should be a month or more further advanced in its development than belongs to the period of uterine life which it has reached.

It is sometimes of importance to determine the momentary life of the child, even although the possibility of its surviving is out of the question. The question as to *what constitutes live birth*, although of less importance at this time than at the natural germ of gestation, has, nevertheless, some bearing upon civil rights and relations. Every spontaneous movement is an evidence of life. To what degree these must be carried, to constitute evidence of life before a court of law, it is not for us to determine. The following case will serve, however, to show that a child may be born alive, in this sense, in the fourth month: A foetus was born which weighed exactly nine and a half ounces, and measured eight inches in length. On touching the feet and hands, the limbs were immediately drawn up and moved about. On blowing on the face, the lower part of it was tremulously moved, and the mouth at each time opened, and three or four times an attempt to respire or gasp, accompanied by an apparently respiratory movement of the chest, took place. The pulsations of the heart through the thin walls of the chest could be readily observed. After

¹ Guy's Med. Jur., p. 180.

the umbilical cord was cut, these movements became more feeble, and soon ceased. On opening the chest, the situation and appearance of the lungs and other organs were characteristic of its apparent age. The lungs, in color and volume, resembled those of an early foetus; and, with the exception of one or two ecchymosed spots, no color or other evidence of developed air-cells were noticed, all the appearances indicating that no air whatever had ever reached the tissue of the lungs. The brain was afterwards minutely examined, and also found to be characteristic of the apparent age, as were also the other foetal organs. The calculations of the mother corresponded with the age given to the foetus.¹

CHAPTER IV.

SUPERFŒTATION.

§ 73. CONCEPTION during pregnancy is termed superfœtation. The early physicians accorded a ready belief to its frequent occurrence; but modern inquiries have led to a more precise and restricted application of the term. There are cases of apparent and of real superfœtation. They may all be conveniently considered under the following divisions:—

1st. Twin pregnancies in which the children, by certain physical peculiarities, prove that they have had different fathers.

2d. Parturition of children nearly at the same time, but differing much in the degree of their development.

3d. After the birth of a mature child, a second one equally mature is born, after an interval which may amount to four months.

1st. Under the first division may be ranged all those cases, of which now a great number have been recorded, where women have given birth to twins of different colors. In some of these the fact of cohabitation at short intervals with men of different colors was admitted by

¹ Dr. Keiller. Read before the Edinburgh Obstetrical Society. Ed. Month. Journ., Sept. 1854.

the woman. A case, very frequently quoted, is that related by Buffon, as having occurred in South Carolina, in which a white and a mulatto child were born to a white woman, who, immediately after having had commerce with her husband, was obliged to receive the embraces of a negro. A similar case is related by Dr. Lopez, in which the mother was a negro woman, and the twins were, the one black and the other mulatto.¹ Dr. Tyler Smith refers to a case occurring in the Brazils, where the indigenous race is copper-colored, but where there are negroes and whites, in which a creole woman had three children at a birth, of three different colors, white, brown and black, with all the features of the several races.²

§ 74. The same fact has been observed in animals. Mende relates that a mare, which had been covered by a stallion, and shortly afterwards by an ass, produced at the same birth both a horse and a mule. Dr. Read of Andover, reports a similar case, except that the mare was covered by the horse two or three days after the ass.

§ 75. Up to what period, after one conception, a second impregnation is possible, cannot, in the present unsettled state of our knowledge respecting the early phenomena of fecundation, be determined with exactness. While some eminent physiologists continue to maintain that the ovum is fecundated in the ovary itself, more recent researches tend to show that it takes place, in normal cases, in the uterus or in the Fallopian tubes, the ova being detached at the menstrual periods, and finding their way to the womb, independent of fecundation. It will be readily seen, therefore, how many questions must be answered before this one can be solved. In addition, the period at which the deciduous membrane is formed in the uterus is not known with sufficient precision to enable us to judge how soon an efficient obstacle is placed against the penetration of the seminal fluid into the uterus, or to an additional impregnation. Dr. J. M. Duncan denies that the plug of viscid mucus in the cervix of the uterus during the early stage of pregnancy, is a sufficient barrier against a second impregnation, as he has found it in the non-menstruating *unimpregnated* uterus. He does not, however, prove that in the latter case

¹ Am. Journ. Med. Sci., Oct. 1845, p. 315. For a large number of similar cases, *vide* references in Beck's Med. Jurisprudence, i. 265; also a case by Dr. Carter, of Va., in Phil. Med. Ex., 1849, p. 523, and another by Dr. A. F. Attaway, of Geo., Am. Journ. Med. Sci., July, 1854, p. 290.

² Lancet, April, 1856, p. 388.

impregnation can take place. He also is led to believe, from an inspection of an ovum *in situ* of about eight weeks, that sufficient space exists between the decidua vera and reflexa at this time, and an open communication to the Fallopian tube, to permit impregnation. He believes that the decidua is formed by the development of the normal mucous membrane of the uterus, without closing the tubes or the cervix uteri.¹ This was the doctrine of William Hunter, and it has received the weighty sanction of Dr. Tyler Smith. In all the known cases of undoubted superfœtation, such as those above cited and referred to, the time which intervened between the separate acts of coition was very short; in fact, where the circumstance has been confessed by the woman, it appears that one sexual act followed almost immediately upon the other. In a case related by Moseley,² a negress brought forth two children at a birth, one a negro, the other a mulatto. She confessed that a white man on the estate came to her hut one morning before she had risen, and she suffered his embraces, *almost instantly* after her black husband had quitted her. In another in which the children were the one black and the other mulatto, the negro mother admitted having cohabited *during the same night* with a negro and an European.³

§ 76. A case of superfœtation by Dr. Taylor, of Miss., forms an exception apparently to the rule. Here a negress brought forth at one birth a black and a mulatto child. The latter appeared to be "three weeks younger than the negro," but as the woman admitted having cohabited with a white man one week after the cessation of the catamenia, and upon a *night succeeding* an act of intercourse with her husband, the case cannot, we think, be viewed differently from the preceding.⁴ The same may be said of Dr. Attaway's case, before referred to; but in this the date of the conception of the white child might have been nearer that of the negro than three days—the interval assigned by the woman.

§ 77. 2d and 3d. The cases of *apparent* and *pseudo-superfœtation* may be embraced in the second and third divisions, which will here be considered together. They are all of them explicable upon the supposition of unequal development of twins; this inequality being

¹ Ed. Month. Journ., April 1853.

² Diseases of Trop. Climates, p. 111.

³ Casper's Wochenschrift, Jan. 8, 1842.

⁴ Am. Journ. Med. Sci., April, 1849, p. 549.

due often to some natural defect in one placenta or one foetus, but frequently also to a direct compression exercised by one child upon the other. In cases where this compression has been so great as to cause the death of one foetus, it may be easily recognised after birth by the appearance of the body. Thus, in a case referred to by Dr. Beck,¹ Mr. Ingleby says: "A few weeks ago, on examining a mature placenta, the expulsion of which was attended with severe hemorrhage, a foetus of four or five months, flattened but not putrid, was found within the membranes, closely adherent to the uterine surface of the mass, and yet a full-sized living child, in connection with this placenta, had just been expelled." Duvernoy² also relates an instance in which the mother gave birth to a living female child, healthy and mature, and immediately afterwards to a dead foetus of about six months, with its head and face extremely flattened and deformed. Pouchet³ gives the history of a most interesting case communicated to him by Dr. Merrielle. A lady was delivered of a healthy and mature female child, which was soon followed by the placenta. Her labor-pains continued notwithstanding, and the next morning she expelled an entire ovum, containing another foetus. This foetus presented all the characteristics of a child of four months; it was seven inches long. Almost every part of its body bore evident traces of compression. Its head was flattened transversely to such a degree, that the sinciput presented a sharp edge, and at the temporal region its diameter was not more than six lines. The chest was also very much compressed. The upper extremities, and particularly the left hand, were greatly flattened. The appearance of the skin showed that the foetus had been a long while dead. It was of a pale brown color, and denuded of epidermis over a great part of the body. Dr. Streeter related a case to the Westminster Medical Society, in which one foetus was alive at full term, and the other blighted, having apparently perished at the third month. It had undergone very little decomposition, and was squeezed quite flat.⁴ Dr. Perkins, of New London, in a letter to Dr. Porter, May 16th 1840, relates as follows: That he delivered a woman of a healthy male child, at full term. The same night she expelled a foetus enveloped in its membranes, between four and five

¹ Med. Jur., i. p. 269.

² Note sur un grossesse double parvenue à terme. Strasbourg, 1834.

³ Théorie positive de l'ovulation spontanée. Paris, 1847.

⁴ Lancet, Oct. 30, 1841.

months old, entirely undecomposed and uninjured, except the head, which was compressed.¹ Dr. Lopez presented to the Medical Society of Mobile a specimen of a blighted foetus of the third month, discharged with a living child at full term. The skull was so completely compressed, that the opposite parietal surfaces were in close contact. The whole body, in fact, was distorted and flattened by the pressure exercised by the other child upon it. It was not at all decomposed.²

§ 78. Having thus seen the compression which one foetus in a twin pregnancy may exercise upon the other, it is not difficult to understand that the pressure may be sufficient to retard its growth without actually destroying its existence. If this compression becomes at a certain period so great, that without destroying the vitality of the foetus, it only permits the blood to reach it in an insufficient degree, one twin becomes arrested in its development, while the other goes on increasing until its maturity, when it is expelled. The remaining foetus, now relieved from the compression, grows with facility, and is born in its turn when it has reached maturity. If, for example, a foetus, in consequence of the compression of the placenta, have at nine months a no greater development than is usual at five, it follows that after the birth of its fellow it must remain four months longer in the womb. Where the placenta is common to the two children, this cannot, of course, occur, since the birth of one child would render the intrauterine existence of the other impossible.³ Among the more remarkable cases illustrating the unequal development of twins, may be mentioned that communicated to Foderé by Desgranges, at Lyons, relative to the wife of Raymond Villard. She was delivered, on the 20th of January 1780, of a living seven months' child; but the delivery was not accompanied with the usual symptoms: no milk appeared; the lochia were wanting, and the abdomen did not diminish in size. Three weeks after the delivery, she felt the movement of the foetus, and on the 6th of July 1780 (five months and sixteen days

¹ Lopez, Am. Journ.. Oct. 1846, where other cases will also be found illustrative of this fact. Dr. J. B. Davis gives a case of the unequal development of foetuses in the same uterus. A woman, seven months advanced in pregnancy, miscarried with twins; one was of seven months' growth, the other of not more than as many weeks. Ohio Med. and Surg. Journ., Sept. 1850. Another case in N. W. Med. and Surg. Journ., Nov. 1850, and another in the New Orleans Med. and Surg. Journ., Sept. 1850. Consult also Montgomery, op. cit., art. Secondary Ovum.

² Loc. cit.

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³ Vide Pouchet, loc. cit.

after the first birth), she was again delivered of a living female child. The milk now appeared, and she was enabled to nurse her offspring.¹ There was an interval of one month in the birth of two mature children in a case related by Dr. Irvine.² In another case, a woman, 35 years of age, was confined on the night of the 30th of March 1848. The placenta came away without difficulty. The size of the abdomen remained very considerable; the lochia did not flow, and nevertheless the surgeon did not conceive the possibility of another child. Dr. Prival, of Bedarrieux, was called in and at once ascertained the presence of a second child. The one already born was full-sized, healthy, and took the breast with avidity. The mother would not remain in bed; she arose and occupied herself with her household cares. Twenty-one days after the birth of the first child, labor-pains again came on, and another child was born, as strong and healthy as the first.

§ 79. Instead, therefore, of attempting to explain those cases, in which, on account of the birth of mature children at an interval varying from a few days to several months, upon the hypothesis of superfoetation, it appears far more easy and rational to believe that they are examples of twin pregnancy, in which one foetus has grown at the expense, as it were, of the other, and is first expelled; the second remaining until it has acquired the necessary maturity. Conclusive evidence of the fact of compression is afforded in those cases of double monsters in which the foetuses differ considerably in size. Such an one, it is stated by Dr. Duncan, exists in his pathological collection.³

§ 80. It has been suggested by various authors that superfoetation can be explained upon the supposition that the uterus was double; but although not a few instances of double uteri are on record, yet, in all, pregnancy, where it existed, occurred on one side only.⁴ We

¹ Foderé, vol. i. 484.

² Med. Times, Dec. 28, 1844.

³ Am. Journ., July, 1849, p. 247, from Med. Times, May 26th. For other cases, *vide* Med. Times, Dec. 1844; Henke's Zeitschrift, 1837—case by Dr. Möbus; Beck's Med. Jur., i. p. 266. A similar case, with the exception that the second child was not born until forty days after the first, is reported in Month. Journ. of Med., Ed. Ap. 1855, from Gaz. des Hôpitaux, Dec. 1854.

⁴ Dr. Oldham (in Guy's Hosp. Rep., vol. vi. p. 551) gives several instances, one of which is particularly remarkable, since not only the uterus, but the vagina also was double. "It was divided," he says, "by a septum of dense organized tissue, sufficiently loose and elastic to stretch without causing pain

have succeeded, however, in finding a remarkable case which has been hitherto strangely overlooked. A woman, native of Modena, became pregnant for the seventh time in 1817. Nine months afterwards, she was delivered of a male child, healthy and fully developed. The placenta was expelled and the woman recovered her health and strength entirely. Still, one-half of the abdomen remained enlarged, and the movements of a foetus were distinctly ascertained. One month after her last labor, she was again confined of a living male child, also well formed. A few years after, she was again pregnant, and bore a child now living. This woman died afterwards of apoplexy. On examination, the uterus was found to be double, but with a single cervix;¹ hence this may have been either a case of real superfœtation—the children occupying each one horn of the uterus, and conceived at the interval of a month—or, on the other hand, it may have been really a twin pregnancy, but whether in the same or different cavities does not appear.

§ 81. The following are the conclusions of Casper upon this subject: 1. The great majority of all the cases of alleged superfœtation have their origin in fraud or in self-deception. 2. Very many of them are nothing more than twin pregnancies. 3. The occasional occurrence of a second conception within a few days after a first cannot be rejected upon scientific grounds. 4. It is not to be believed that a new conception can take place in a female who is several weeks or months pregnant. 5. The possibility of a double pregnancy in a double uterus is not to be denied.² Prof. Kussmaul, of Heidelberg, who has thoroughly examined this subject, concludes that the condition of pregnancy offers no real hindrance to a second conception within the first two or three months. He holds, however, that true superfœtations, as the result of the fecundation of separate ova within different menstrual periods, if judged of by the cases that are recorded under this title, are simply examples of mul-

so that both canals were equally capacious." The duplicity of the uterus was ascertained beyond a doubt. The woman was safely delivered. In the unim-pregnated half, menstruation did not occur during pregnancy.

¹ Another remarkable case of double uterus and vagina is reported by Dr. Kelly, of New York (Am. Journ., Oct. 1852, p. 328.) He furnishes references also to other cases.

² Encyclographie Médicale, Fev. 1849.

³ Gericht. Med., ii. 228.

triple conception, followed by the death or arrested growth of one or more of its products.¹

§ 82. Schultze² draws a distinction between superfecundation, which he defines as the fecundation of several ova of the same ovulation period, and superfoetation, *i. e.*, the impregnation of a second ovum which left the ovary during an existing pregnancy. The first he regards as quite probable, as he denies that the os uteri is occluded by a mucous plug, and says that he has found living spermatozoa in the secretions of the vagina six days after the last coitus. On the other hand, while he admits the possibility of superfoetation, he contends that it has never been established by cases; and Kussmaul³ considers that the cases reported are readily explicable in other ways.

§ 83. It may be necessary to state, that, where extra-uterine pregnancy takes place, the uterus may receive a new ovum. Mende⁴ gives two cases of this kind, and Horn⁵ relates a case of co-existent uterine and extra-uterine pregnancy, in which the woman was safely delivered of the child which was contained in the uterus.

CHAPTER V.

ABORTION AND FÆTICIDE.⁶

§ 84. 1st. *Natural causes.*—The *natural causes* of the premature expulsion of the foetus from the womb are extremely numerous. They are found in certain morbid conditions of the system, either original or dependent upon pregnancy—in diseases of the ovum and its appendages, and in a class of causes usually called accidental, but which might, perhaps, in reference to the present subject, be termed *direct* or *immediate*. We refer our readers, for an enumeration of

¹ Brit. and For. Med. Chir. Rev., Jan. 1860, p. 113.

² Jenaisch Zeitung, 1865. N. Syd. Soc. Bien Retrospect, 65 and 66, p. 393.

³ Deut. Zeitung, vol. xiii. part 2.

⁴ Gericht. Med. p. 355.

⁵ Siebold's Journ. für Geburtshülfe, 8 Bd. s. 330.

⁶ On the legal questions involved in this topic, see *infra*, § 860, *et seq.*

the predisposing causes of abortion, to those works on midwifery which treat directly and at length upon the subject. It is not our purpose to dwell upon them here. The consideration of them has, we conceive, but a slight bearing upon criminal cases, since the object in these is to ascertain the employment and mode of action of some medicinal substance, or culpable manœuvres, in reference to their tendency to produce the premature expulsion of the foetus. In estimating the legal criminality of attempts to produce abortion, we should not, without sufficient grounds, impute the occurrence of this event to the designs and attempts of the accused party; for, however criminal the intention, if the means employed were wholly inadequate to fulfil it, there is no room for the intervention of the law. In this connection it should not be forgotten that abortion is an accident of common occurrence, to which many women are peculiarly subject, and which may depend upon disease of the placenta or foetus, the death of the latter, syphilis, smallpox, or other constitutional disease of the mother, or which may be occasioned by various causes accidentally producing weakness, or, finally, which, relatively to the strength of the female, are violent and sufficient to bring on uterine contractions, although innocuous under ordinary circumstances. At the same time a natural tendency to abortion would not, we presume, mitigate the criminality of the act procuring it. In truth, abortion can rarely be designedly effected, unless by mechanical means, where there is not a predisposition to it; hence the violence and fatality of the measures which are sometimes used to accomplish it. The cases are, indeed, too familiar to be deserving of special record, in which, after the most violent bodily injuries, women have not aborted, but carried their children the full time and been safely delivered. Mr. Whitehead, for example, mentions the case of a poor woman, in the fourth month of pregnancy, who received a severe fracture of the skull from a blow with a hatchet, for which she was under treatment nine weeks. She was delivered of a healthy child at the full term of utero-gestation.

§ 85. 2d. *Drugs.*¹ (1) *Ergot.*—Most authors assert that there are no specific medicinal substances by which abortion can be produced. The only drug which has any claim to be considered as specific in its action upon the uterus is the *ergot of rye*. Some writers allege that it is only capable of increasing the energy of the uterine contractions when

¹ As to infanticide and foeticide, see 776.

these have already begun, and deny to it the power of originating them. We need, however, in this place, only show that it has this power. Thus, Mr. Whitehead (who by no means favors the view of its specific character) states, that in a case under his care, where, owing to deformity of the pelvis, it was necessary to get rid of the foetus in the fifth month of pregnancy, the ergot alone was employed; and at first with desired effect. It was given in three successive pregnancies, and in each instance labor-pains came on after eight or ten doses had been administered, and expulsion was effected by the end of the third day. Tried in a fourth pregnancy in the same person, it failed completely.¹ Hoffman has collected the experience of others with this substance. Out of forty-seven cases of premature labor in which the ergot was employed, it produced it, without the necessity of, or the employment of other means, in thirty-two, while, in the remaining fifteen cases, it was given in addition to other means.² Dr. Ramsbotham says: "*Egomet ipse tamen permulta vidi exempla, in quibus partus prematurus inductus fuit septimo vel octavo graviditatis mense peracto, solo secalis cornuti usu, ovuli membranis integris servatis, ore uteri occluso neque digito, neque ullo alio modo ad patefactionem excitato.*"³ The same author has recently published a valuable paper on the induction of premature labor by the ergot, in which, we think, the reader will find conclusive evidence of the specific power of this drug. Premature labor was artificially induced by it in three successive pregnancies in one patient. A table of fifty-five cases is given in which it was successfully used.⁴ Dr. Churchill says: "Ergot of rye is now pretty generally supposed to have the power of originating uterine contractions."⁵ Much of the difference of opinion with respect to the uterine tendency of ergot depends no doubt upon the inertness of certain samples of the drug gathered at the wrong period, since it appears, upon good authority, that it should be collected during its stage of formation, being powerless afterwards. It is now well ascertained that, independently of its exciting uterine contractions, ergot directly affects the life of the foetus by a depressing

¹ On the Causes and Treatment of Abortion and Sterility. Am. ed. 1848.

² Neue Zeitschrift für Geburtshunde, Bd. 23.

³ Parturition. London, 1841. Appendix, p. 639.

⁴ Med. Times, Jan. 1854.

⁵ Syst. of Midwifery, p. 279. See also Shapter, Prov. Med. Journ., April, 1844.

action upon the heart, and thus may indirectly become a cause of abortion. Instances of the sort are numerous during epidemics of ergotism, or the poisonous effects of ergot produced by eating bread made of flour containing this product.

§ 86. (2) *Savin and oil of tansy* are more frequently used than ergot. They have both unfortunately a popular reputation as emmenagogues and as agents for producing abortion. Whatever good effect their stimulant properties may have in cases of amenorrhœa dependent upon feeble development, it is very certain that they have no direct power of instituting uterine contractions. Their action as abortives is solely due to their poisonous properties, since when given in proper medicinal doses they are merely aromatic and stimulant, and may prove emmenagogue, without necessarily exciting uterine contractions. In fact, tansy is in common use as an agreeable bitter for promoting the appetite. We think, however, that the administration of either of these drugs to pregnant women should always be looked upon with suspicion, for we cannot imagine any condition which, at this time, would require or justify their employment. In a case in which probably from one to two ounces of the oil of savin had been swallowed, a most violent inflammation of the stomach was excited, followed by softening and perforation of this organ, peritonitis, and death. The uterus was empty; it was of the size usual at the third or fourth month of gestation, and, judging from the state of the parts and the lochial discharge, the foetus had been expelled, it was supposed, from two to three days. Morphia and chloroform had both been taken by the unhappy woman, but the violent inflammatory results found at the post-mortem examination were, no doubt, properly ascribed to the action of the savin.¹

§ 87. Dr. Lee states that he has known an instance where sixty drops of the oil of savin were taken every morning for a week, for the purpose of procuring abortion, in the sixth month of pregnancy. It brought on violent pain in the abdomen and region of the uterus, and the woman died on the third day after the delivery of a still-born foetus; on dissection, the uterine organs as well as the pelvic viscera generally were found to be in a state of high inflammation. Another case is mentioned in which an infusion of savin was taken for a simi-

¹ Am. Journ. Med. Sci., April, 1851, p. 529. Communicated to Dr. T. R. Beck by James H. Salisbury, M.D., of Albany, N. Y.

lar purpose. It brought on violent and incessant vomiting, extreme pain and uterine hemorrhage, and death in a few days.¹

Dr. Taylor met with a case in which death was caused by powdered savin—abortion having first taken place. Eight ounces of green liquid were found in the stomach, which, with the oesophagus and the small intestines, was highly inflamed. The poison was identified by observing the minute portions of the leaves under the microscope.²

§ 88. A case of poisoning with oil of tansy is reported by Dr. Dalton, of Boston, in which death, after the most violent convulsions, took place at the end of three hours and a half; the quantity swallowed was more than an ounce. The uterus contained a well-formed foetus about four months old, and there was not the least appearance anywhere of the foetus or membranes having suffered any disturbance.³ In another fatal case of poisoning with this oil, reported by Dr. Hildreth, the quantity taken was half an ounce, and death followed in less than two hours. Pregnancy of a few weeks' standing existed, and the drug was, as in the former case, undoubtedly taken for the purpose of producing abortion, but nothing of the kind took place.⁴

§ 89. The leaves and unripe fruit of the common *rue*, most probably, act like the foregoing drugs, solely by their irritant properties, which have been used with the hope of procuring abortion. The only cases which we have met with, where this was successfully induced, are those reported by Dr. Hélie. The constitutional symptoms were in them, very alarming, resembling such as are produced by poisons of a narcotico-acrid character.⁵

§ 90. Powerful purgative medicines, such as aloes, jalap, croton oil, and elaterium, given repeatedly, or in doses capable of setting up violent action of the lower bowels, may produce abortion by a secondary action upon the uterus. The same may be said of cantharides and turpentine. All of these drugs are capable of producing a great degree of active congestion and inflammation in the pelvic viscera, and hence the uterus is not always exempt from their action. At the same time, they can hardly produce this result without seriously endangering the mother's life. It is certain that in the greater num-

¹ Copeland's Med. Dict., Am. Ed., art. "Abortion."

² Med. Gaz. xxxvi. 646.

³ Am. Journ. Med. Sci., Jan. 1852, p. 140.

⁴ Id., May, 1835.

⁵ Ann. d'Hyg. Pub., vol. xxx. p. 120.

ber of cases, where abortives are criminally employed, the life of the mother is more readily sacrificed than that of her offspring.

§ 91. 3d. *Venesection* has seldom a tendency to produce abortion. On the contrary, there is no remedy more in vogue for warding off a threatened abortion than this, and numerous authors testify that pregnant women have been bled many times in succession without this result ensuing.

Nevertheless, when pushed to the extent of causing syncope it may have that effect. M. Dépaul¹ relates an instance in his own practice, where a woman, apparently suffering with severe headache, in two successive pregnancies, applied to him for the purpose of being bled. He afterwards discovered that the bleedings in these and on one previous occasion had destroyed the foetus, and that he thus had ignorantly seconded the intentions of the mother. Suction of the nipples by the mouth or by cupping glasses has occasionally been resorted to for the production of premature labor.²

§ 92. 4th. *Mechanical means.*³—In some instances the woman seeks to rid herself of her burden, by making use of violent exertion, by direct injury to the abdomen, or by the introduction of instruments into the womb. These attempts are often unsuccessful when made by the female herself, and even by an ignorant accomplice. A tailor's apprentice attempted to produce abortion in his mistress, by thrusting into her vagina the large scissors, used in his trade, and cutting with them. He wounded the vagina, but failed in his purpose.⁴ Although the use of instruments generally indicates the intervention of another person, yet cases are known in which the woman has herself succeeded in introducing them. Thus, in a case in this country, a female brought on abortion by "probing herself with a piece of whalebone," and she declared that she had miscarried five times previously by the use of drugs.⁵ More frequently, however, the abortion is accomplished through the culpable assistance of persons who make a trade of this nefarious practice. While, for the most part, the persons who are ready to degrade their humanity to this occupation are exceedingly ignorant and wholly unskilled in medical knowledge, it cannot be

¹ *Traité d'Auscultation Obstétricale*, p. 270.

² Scanzoni, *Med. Times and Gaz.*, Oct. 1853.

³ See as to legal questions, *infra*, § 860, *et seq.*

⁴ Casper's *Gericht. Med.* ii. 251.

⁵ *New York Journ. of Med.*, vol. vii. p. 199.

denied that occasionally medical men lend their skill to the accomplishment of the woman's purpose. Such conduct cannot be too strongly condemned, and is the more deserving of receiving the punishment awarded for the criminal offence in question than are the blundering and reckless attempts of those less skilled, and who may, in many instances, be scarcely aware of the probable results of the operation to the mother.¹ In the one case, the practice may be carried

¹ "We blush, while we record the fact, that in this country, in our cities and towns, in this city where literature, science, morality and Christianity are supposed to have so much influence; where all the domestic and social virtues are reported as being in full and delightful exercise; even here individuals, male and female, exist, who are continually imbruining their hands and consciences in the blood of unborn infants; yea, even *medical* men are to be found who, for some trifling pecuniary recompense, will poison the fountains of life, or forcibly induce labor, to the certain destruction of the foetus, and not unfrequently of its parent.

"So low, gentlemen, is the moral sense of the community on this subject, so ignorant are the greater number of individuals, that even mothers, in many instances shrink not from the commission of this crime, but will voluntarily destroy their own progeny, in violation of every natural sentiment, and in opposition to the laws of God and man. Perhaps there are few individuals in extensive practice as obstetricians, who have not had frequent applications made to them by the fathers or mothers of unborn children (respectable and polite in their general appearance and manners), to destroy the fruit of illicit pleasure, under the vain hope of preserving their reputation by this unnatural and guilty sacrifice.

"Married women, also, from the fear of labor, from indisposition to have the care, the expense or the trouble of children, or some other motive equally trifling and degrading, have solicited that the embryo should be destroyed by their medical attendant. And when such individuals are informed of the nature of the transaction, there is an expression of real or pretended surprise that any one should deem the act improper, much more guilty; yea, in spite even of the solemn warning of the physician, they will resort to the debased and murderous charlatan, who, for a piece of silver, will annihilate the life of the foetus, and endanger even that of its ignorant or guilty mother.

"This low estimate of the importance of foetal life is by no means restricted to the ignorant, or to the lower classes of society. Educated, refined, and fashionable women, yea, in many instances, women whose moral character is in other respects without reproach, mothers who are devoted, with an ardent and self-denying affection, to the children who already constitute their family—are perfectly indifferent respecting the foetus in utero. They seem not to realize that the being within them is indeed *animate*—that it is in verity, a *human being*, body and spirit; that it is of importance; that its value is inestimable, having reference to this world and the next. Hence, they in every way

on for a considerable time with impunity, and hence a larger number of children be secretly sacrificed ; in the other, the career is usually

neglect *its* interests. They eat and drink, they walk and ride, they will practise no self-restraint, but will indulge every caprice, every passion, utterly regardless of the unseen, and unloved embryo. They act with as much indifference as if the living, intelligent, immortal existence lodged within their organs were of no more value than the bread eaten, or the common excretions of the system. Even in cases where mothers have suffered from repeated abortions, where foetus after foetus has perished through their neglect or carelessness, and where even their own health is involved in the issue, even in such cases every obstetrician can bear testimony to the great difficulty of inducing our wayward patients to forego certain gratifications, to practise certain self-denials, and to adopt efficient means for the salvation of the child.

" This is not all. We can bear testimony that in some instances the woman who has been well educated, who occupies high stations in society, whose influence over others is great, and whose character has not been impugned, will deliberately resort to any and every measure which may effectually destroy her unborn offspring. Ashamed, or afraid, to apply to the charlatan, who sustains his existence by the price of blood, dreading, it may be publicity, she recklessly and boldly adopts measures, however severe and dangerous, for the accomplishment of her unnatural, her guilty purpose. She will make extra-muscular efforts by long fatiguing walks, by dancing, running, jumping, kept up as long as possible ; she will swallow the most nauseous, irritating and poisonous drugs ; and in some instances, will actually arm herself with a surgeon's instrument, and operate upon her own body, that she may be delivered of an embryo, for which she has no desire, and whose birth and appearance she dreads.

" These facts are horrible, but they are too frequent and too true. Often, very often, must all the eloquence and all the authority of the practitioner be employed ; often he must, as it were, grasp the conscience of his weak and erring patient, and let her know, in language not to be misunderstood, that she is responsible to her Creator for the life of the being within her."—*On Criminal Abortion ; a Lecture introductory to the Course on Obstetrics, etc., in the University of Pennsylvania*, by Hugh L. Hodge, M.D. Philadelphia, 1854.

In an article upon this subject (*Annales d'Hygiène*, 1856, v. 121), M. Tardieu, after referring to the crime as one allowed to go unpunished, and as a source of wealth to more than one midwife in New York, says (p. 125) : " In common with the magistrates and the mortality inspectors of Paris and its environs, I am convinced that criminal abortion constitutes a trade as free as it is immoral. So well is this fact known, that houses are openly shown where women may be sure of meeting with the wicked accomplices they require, and which are notorious even beyond the frontiers." Statistical reports, analyzed by Dr. H. R. Storer (*N. Amer. Med. and Surg. Journ.*, 1859), render it probable that the prevalence of this crime in the United States and in Europe is greater than those who have not examined the subject, could conceive to be possible. Dr. Walter Channing, of Massachusetts, refers to the difficulty of obtaining a con-

short or interrupted, for its murderous consequences become too soon apparent.

§ 93. It is not necessary to describe the manner in which the operation is performed. The deplorable results of the clumsy manœuvres usually practised are sometimes, though rarely, brought to light. An inquest was held at Nottingham in a case of abortion which had been produced by the introduction of a wooden skewer into the uterus. The child's head had been perforated by this instrument; it was four and a half months old. A verdict was rendered, in accordance with the surgical evidence, that the woman had died of peritonitis, caused by the rupture of an abscess in the ovary.¹ A female, a single woman, went to the house of the prisoner, and, having informed her of her pregnancy, underwent an operation, as described by witness, of having a pin thrust up into the womb. This was repeated for several days, and it ended in the delivery of a male child of about six months' development. The child was born alive, but died about five hours afterwards.² Dr. Channing relates the case of a woman who, believing herself to be pregnant, attempted to produce abortion by introducing into the womb a piece of soft wire bent upon itself for an inch or more at the further end. She succeeded in thrusting the wire into the uterus, but was unable to withdraw it, and, after suffering severe pain, she called in medical aid, but the wire could not be removed. Her attending physician then cut it off as high up as possible, and six years afterwards the wire was still there. In this case the female was not pregnant.³

§ 94. Zuchmeister⁴ says that he was called upon to remove a foreign body from the vagina, which had pierced one lip of the os uteri. Upon examination it proved to be a twig of the prunus spinosa, which is said by the reporter to be much used in Essen by those practising this detestable trade.

§ 94 a. The operation required is one of an exceedingly delicate and difficult nature, and even those who are conversant with the anatomical fiction for abortion, and adds: "I believe there has never been one in this State, this moral State by eminence, and perhaps in none is this crime more rife." (Boston Med. and Surg. Journ., April, 1859, p. 135.)

¹ Lond. Med. Gazette, xlvi.

² Am. Journal, April, 1851, p. 526, from *The Queen v. West, Carrington and Kirwan's Nisi Prius Reports*, vol. ii. p. 784.

³ Boston Med. and Surg. Journal, April, 1859, p. 137.

⁴ Allg. Wien. Med. Zeit., 1864, p. 81.

arrangement of the parts interested require to be careful in their manipulations. The operation of inducing premature labor in this way has been sometimes attended with accidents. Thus, Dr. J. B. S. Jackson reports an instance in which the internal iliac artery was opened by an instrument introduced for the purpose of expediting labor.¹ A similar case is recorded, in which the left common iliac was punctured. In this case, which was brought to trial, the jury returned a verdict that the woman had died of a spontaneous rupture of the artery.² In France an attempt was made recently to produce abortion by the injection of a corrosive and irritating substance into the vagina.

§ 95. It is evident that in all these cases of local violence, should death result, a careful anatomical inspection would reveal the crime. In case, however, the woman survive the operation, a medical examination would probably be superfluous.

We do not recollect to have met with any case of criminal abortion more horrible than that reported in one of the English medical journals.³

A man named Asher, known as an "herb doctor," undertook, for the sum of two sovereigns, to procure abortion upon the person of a woman named Elizabeth Fletcher, who, in the absence of her husband, had become pregnant.⁴ The operation was performed upon the woman at his own house, and from that moment she began to suffer pain, which increased, and she became seriously ill. Asher being called upon to see her, "introduced *his hand and arm* into the *vagina*, and kept them there from five to ten minutes, during the whole of which time the woman was in frightful agony." From this time the pain increased greatly in severity, and vomiting commenced. Her death ensued in less than a week from the operation. An examination of the body was instituted. There were marks of contusions extending from about two inches below the umbilicus, on either side, to the symphysis pubis. The muscles of the abdomen, at this part, were infiltrated with pus, and coagulated blood was found between them. Recent adhesions united the omentum to the surface of the intestines, and blood was extravasated in the vicinity of the uterus and bladder. The bladder was almost black, and in a state of gangrene. In its

¹ Dublin Med. Press, Aug. 1848.

² Id.

³ Med. Times and Gazette, March, 1855.

⁴ As to liability for malpractice, see *infra*, § 750, *et seq.*

posterior wall was a large lacerated opening, and an aperture of considerable size in the corresponding part of the anterior wall of the neck of the uterus; two-thirds of the neck of the uterus were detached from the body of the organ. Through these openings the foetus had escaped *from the uterus into the bladder*, in which latter viscus it was found, together with some coagulated blood. This criminal, who is described as a "gray-headed old man, upwards of sixty years old," and who appears to have had much experience in performing those iniquitous operations, was sentenced to transportation for fourteen years only.

§ 96. (1) *Premature labor* is frequently induced in *legitimate medical practice*, for the purpose of avoiding the risks which in some cases attend parturition at term. The pelvis is sometimes so much deformed, that a mature child cannot possibly be born alive. The choice in such cases, lies between the Cæsarean operation and an artificial premature birth. The proportion of children born at seven months that live, is, of course, smaller than if they were carried to the end of gestation, and could be delivered; but as, in the cases of deformity alluded to, the child's life must inevitably be sacrificed by birth through the natural passages, it becomes a vital question how its life may be preserved with the least risk to the mother. The statistics of the results of the Cæsarean operation give no cheering view of its value; the danger to the mother's life is infinitely greater than in the induction of artificial labor, which, in fact, in competent hands is a trifling operation. The average number of children saved by this means is rather more than one-half of the cases operated upon. The practice which, when first proposed, awakened some doubts as to its morality, has now received the sanction of the highest medical authorities, and is universally regarded as justifiable and beneficent. Although deformity of the pelvis is usually the motive for the operation, it may be properly employed in other cases, as, for example, in women whose children habitually die before the term of gestation is reached, or who are suffering from diseases the danger of which is much heightened by the continuance of pregnancy. Yet the propriety of its employment in the latter case must be admitted with some reserve; the sympathetic phenomena of pregnancy are often far more alarming in appearance than in reality, and will rarely justify any interference with the natural progress of gestation. In all cases, the physician should consult with one or more of his colleagues

before inducing premature labor; in this manner, his humane intentions will not expose him, in case of failure, to reproach, suspicion, or prosecution.

§ 97. (2) *Blows upon the abdomen* are often designedly given with the view of causing a woman to miscarry.¹ It is impossible to define the degree or mode of violence required to effect this purpose. Where uterine hemorrhage occurs shortly after ill-usage of this nature, it is reasonable to attribute it, and the abortion which follows, to the violence used. Great circumspection is, however, necessary in giving a positive opinion when the hemorrhage preceding the miscarriage is not the immediate consequence of the injuries received, since a woman may happen to abort from other causes, or she may be near her confinement. In such a case, it may be necessary to determine whether labor has been spontaneous, or been provoked by the ill treatment. Ordinary labor does not commence with free hemorrhage (except in the case of *placenta prævia*), while, on the contrary, that which is brought on by blows upon the abdomen does so because the placenta becomes, by this violence, partly or wholly detached from the uterus. If the violence has, however, been inflicted upon other parts than the abdomen and loins, this criterion cannot be safely relied upon, and the dependence of the premature labor upon the injury must be established by other means.

§ 98. 5th. *Signs of abortion.*²—The signs of abortion having taken place are obtained—(1) From an examination of the object expelled. This is necessary, in order to determine its human character and its probable age. Other bodies are expelled from the womb which bear a greater or less resemblance to the human embryo, but are not always the products of conception. Most frequently, however, they are the products of conception, but in a diseased condition.

§ 99. The substances called *moles*, which are not unfrequently met with, fall under this denomination. The fleshy mole (also called “false germ”) is composed of layers of fibrous matter inclosing a central cavity, in which sometimes fragments of the embryo can be recognised, but in others it appears to have been dissolved in the amniotic liquor. This body is supposed to be a hypertrophy of the placental surface of the chorion. The hydatid mole, or *môle vesicu-*

¹ As to legal effect of wounds, see *infra*, §§ 775 *et seq.*

² As to legal questions, see *infra*, § 860.

laire, is certainly a morbid alteration of the placental surface of the chorion. Velpeau and Mad. Boivin¹ have given so clear and accurate a description of the real character of this pathological product, that there remains but little of the mystery which formerly enveloped it. It consists of a dilatation of the cellular spongioles of the chorion. These increase, until they form a mass inclosing the ovum more or less completely. The remains of the foetus are sometimes found;² at others, again, the disease would seem to have originated at so early a period that the embryo has become dissolved in the amniotic fluid. In this case, a trace of umbilical cord is sometimes found. These hydatids may remain in the uterus a much longer time than the usual duration of pregnancy; and hence, as they are the result of conception, an opinion as to their probable age should be given with great caution, lest unjust aspersions should be thrown upon the character of the woman. The principal obstetrical authorities relate instances of the expulsion of hydatids from the uterus at ten, eleven and fourteen months after conception, and some agree in admitting that they may be retained many years. Dr. Montgomery says that he has not met with any instances of such long retention.³

§ 100. In cases of difficult menstruation, there are sometimes expelled substances which by some persons might be mistaken for an early ovum. These are in some cases, false membranes, occasionally discharged entire,⁴ preserving the shape of the uterine cavity; in others, again, they are membranous concretions, originating from coagula of blood. The first variety is distinguished from the ovum by the absence of the flocculi of the chorion, to which the outer surface of the menstrual membrane, however rough it may be, bears no resemblance.⁵ In the other, the central cavity is wanting, and no trace of umbilical cord or placental surface can be found; besides this, it differs from the ovum in shape, being longer, thick in the middle, and pointed at either end. Of these productions, Dr. Denman says: "As the first

¹ Nouvelles Recherches sur l'Origine, la Nature, etc., de la môle vesiculaire.

² Dr. J. B. S. Jackson exhibited to the Society for Medical Improvement in Boston, a specimen, showing uterine hydatids connected with the membranes of a four months' foetus. Am. Journ. Med. Sci., April, 1850, p. 359.

³ Pregnancy, etc., 2d ed., p. 267.

⁴ Dubois, of Neufchâtel, gives the case of a girl who, at every menstrual period, expelled a hollow membranous body corresponding exactly with the shape of the uterus. Gaz. Méd., 1847, p. 729.

⁵ Churchill, Dis. of Females, p. 103.

cases in which this membrane was discharged were those of married women, a doubt arose in my mind whether it was not really a consequence of early conception, but I have lately had the most undoubted proofs that it is sometimes discharged by unmarried women, and may be found previous to and without connubial communication; and that the uterus has occasionally, or constantly, in some women, the property of forming it at or in the interval between the periods of the menstrual discharges. It seems particularly necessary to establish this fact, as the appearance of this membrane has more than once given rise to erroneous opinions and unjust aspersions."¹ In examining doubtful masses expelled from the womb, they should be carefully cleansed and macerated in water, to dissolve the coagula.

§ 101. In conclusion, it may be mentioned that there can be no danger of mistaking for ova the *polypi* which are sometimes discharged from the uterus, since these are easily recognised by the remains of the pedicle, as well as by their structure.

§ 102. The brief description given above of the various substances which may be discharged from the uterus, will suffice, we hope, to show that those which are called *moles* and *hydatids* are diseases of the appendages of the embryo, and that, even if no traces of the latter remain, yet the existence of these peculiar degenerations places the fact of impregnation beyond question; while, on the other hand, the products of a disordered menstrual function are so different in character as to be recognised as such without difficulty.

§ 103. The probable age of the ovum, or of the foetus, is ascertained from a consideration of the degree of its development. It is impossible to declare with positive accuracy the dimensions, weight, and degree of development of the foetus at any given period of its intra-uterine life. The date of conception can never be known with certainty, and even if it could, and the age of the foetus be ascertained, yet the weight and length, as well as the development, depend upon individual peculiarities. The same variety that is found in the bodily proportions of adults must prevail in the foetus. Hence, the statements which follow must be looked upon as averages only.

§ 104. At the earliest period at which the human embryo can be recognised, it is of a somewhat crescentic shape, with the cephalic

¹ *Introduct. to Midwifery*, p. 161.

extremity large and rounded; it is a semi-transparent viscid mass, and from the lower portion of its concave side the umbilical cord takes its origin. The whole ovum presents a loose, shaggy appearance, arising from the tufts of the chorion. A few weeks later, this is confined to only a portion of the surface of the ovum, from which the placenta becomes afterwards developed.

In the course of the *fourth and fifth week*, the rudiments of the several parts of the foetus become distinct. The mouth is the first feature which is observed, and is very large, and of a triangular shape; the eyes are like two black specks, and the liver occupies the whole of the abdomen. A moving point can be seen where the heart is afterwards developed, but the blood is not yet of a red color.

By the *sixth week* the forearm and leg are distinct, and the former is detached from the side, to which it was bound. The rudiments of fingers and toes can be discerned. At the *eighth week* the head forms more than one third of the body, the features are more distinct, but the sex is not yet manifest. Red blood is found in the vessels of the cord.

At *three months* the foetus has attained the length of two to two and a half inches (Devergie), and the size of the whole ovum is about that of a goose's egg. The fingers are separated, the toes are connected together by a soft substance, the soles of the feet are turned inwards, and the genital organs are quite distinct, having indeed a size and prominence disproportional to their subsequent development.

At *four months*, the length is from five to six inches (Devergie, Velpeau), and the weight, as given by the best authorities, is very various, ranging from two and a half to eight ounces. At this time the pupillary membrane is more distinct than before, the skin is rosy but very delicate, and covered with a fine down, while the hair of the head is short, and of a silvery-white appearance.

At *five months*, the foetus is from six to seven inches long, and weighs from five to seven ounces (Devergie). The head forms one-fourth of the body. The large intestines contain meconium in their upper portion. Quickeening takes place usually at the beginning of the fifth month. In case of abortion at this period, the foetus usually escapes first through the ruptured membranes, these, with the placenta following it.

At *six months*, the head is no longer so disproportioned to the size of the body, and the umbilical cord arises a little above the pubis. The length is from nine to ten inches, and the weight one pound (Devergie). Fat is found in small quantity under the skin ; the latter is of a purplish color, especially in the palms of the hands and soles of the feet, as well as in the lips and ears. The scrotum, however, is of a reddish color ; the testicles are still in the abdomen. In females, the external labia project, but do not conceal the clitoris, which is large and prominent. The pupillary membrane is distinct and firm. The nails look like folds of skin. The hair is still scanty and short, and of a silvery-white color.

At *seven months*, the foetus is found to have increased in all its proportions. It measures in length from twelve to fourteen inches, and weighs from two to three pounds. The bones of the head are still yielding on pressure ; the frontal bone consists still of two parts ; the ears lie close to the head ; the arms and legs are bent in the position which they had in the uterus, if the child be born alive. At the *eighth month*, the length is from sixteen to eighteen inches, and the weight three or four pounds. The skin, in color and thickness, is more like that of a child at term ; it is covered with a fine short hair, and the hair of the head is of a darker color. Sometimes one of the testicles (generally the left) has descended into the scrotum ; usually, however, they have not passed the abdominal ring. The pupillary membrane begins to disappear towards the close of the month. During the *ninth month* the foetus gradually increases its length, until it attains from eighteen to twenty-two inches, and in weight on an average about seven pounds. The characteristic marks of maturity are considered to be the following :

§ 105. The average length of a healthy, mature child is about eighteen inches, and its weight from six to seven pounds. Its skin is of a reddish-white color ; the hair is pretty thick and strong ; the nails of the fingers perfect, and the ears cartilaginous. The limbs are firm and rounded, and the testicles of the males usually are found in the scrotum. According to Moreau, the navel string is inserted a few lines below the centre of the body—a statement which is confirmed by the observations of Drs. Taylor,¹ Ollivier and Elsässer,

¹ Med. Jur., p. 285, Am. ed. Dict. des. Sci. Med., Art. *Œuf*. Henke's Zeitschrift, Bd. 42, p. 256. Dr. Elsässer also states, that in the well-proportioned adult, the middle of the body is not at the navel, but at the rising point

although opposed to the opinion formerly held, that its point of attachment at the end of gestation was exactly the centre of the body. It is, moreover, firm and elastic. The child breathes and cries immediately after birth unless the third stage of labor has been protracted; is able to take the breast and swallow, and within a few hours passes its urine and meconium. The meconium, however, is often not passed for two or three days; and in some cases is voided unobserved during birth. The presence of the *vernix caseosa*, a sebaceous secretion upon the skin, is found, according to Elsässer, upon about one-half of newly-born children.

§ 106. The several signs of *immaturity* may be thus stated in general terms. The body is small, lean and flaccid; the skin tender, wrinkled, red, and upon the palms and soles, purple; and the lips, ears and genitals bleed very easily. The head is out of all proportion to the body, as is also the skull to the face; the bones of the skull are widely separated by membranous sutures, and very movable; the hair of the head is scanty, short and silvery; the eyelids and lashes are downy. The face has an old and painful look; the pupillary membrane is present, and the ears are thin and membranous. The naval string is attached near the pubes; the scrotum is very red, and not much wrinkled; the testicles are still in the abdomen; the lips of the vulva stand apart from each other, and the disproportionate clitoris protudes between them.¹ The immature child, moreover, breathes with difficulty; its voice is weak and whimpering; it sleeps continually, cannot suck, and shows no desire for food.

§ 107. (2) The signs of abortion, as obtained by an *examination of the female*, are not very certain in their character. It is seldom, indeed, that an examination of the living female is had, and especially at a period early enough to afford any valuable indications. When abortion occurs in the early months, it leaves but slight and evanescent traces behind it. A relaxed condition of the parts, which at the same time are covered with blood proceeding from the womb, resembles so closely the condition present during the catamenial flow that, practically, they could hardly be distinguished. The open state of the mouth of the womb may, in some cases, throw light upon the

of the *mons veneris*; a fact, which he says, is generally received by artists and confirmed by a measurement of the best antiques.—S. Tabelle für bildende Künstler von Joseph Mattersberger (nach Antiken), 1805.

¹ Bock, loc. cit., p. 241.

question. All these signs are, however, more distinct in the latter half of pregnancy, and, as the term of gestation approaches, closely resemble the signs of "delivery." (See § 23.)

We also refer the reader for a consideration of the value of the *corpora lutea*, as indicative of pregnancy, to the chapter on the Signs of Delivery. We would merely repeat here, that although there is, in our opinion, sufficient evidence of a marked difference between the *corpora lutea* of pregnancy and those of menstruation, it requires more general assent and more complete substantiation to allow positive inferences from their discovery to be put forward in criminal, or other important cases, without reserve.

For the latest views upon the corpus luteum *vide* Waldeyer's article upon the Ovary and Parovarium, in A Manual of Human and Comparative Histology, by Stricker. N. Syd. Soc. Trans., Vol. II., p. 203.

CHAPTER VI.

INFANTICIDE.¹

§ 108. 1st. *Characteristics of stillborn and living children.*—In the following considerations upon this subject, we shall restrict our remarks to the medical testimony required in the determination of questions arising out of the doubtful causes of death in *new-born* children. By this phrase we propose to designate those cases in which doubts concerning live-birth may fairly be entertained. Those which do not require the solution of this question as preliminary to a judgment upon the fact or the manner of criminal interference, cannot, with strict propriety, be classified under the head of Infanticide. The degree of criminality of the offence is determined by the period at which it was committed, whether before or after birth; but manifestly this point is, at a certain period after birth, no longer subject to doubt. The mode of death at this time, whether criminal or otherwise, will be

¹ See as to legal questions involved, §§ 860 *et seq.*

determined by the same general rules that are applicable in adult life. Hence the first purpose of medical investigation in cases of alleged infanticide, is to ascertain whether the child was born alive.

The evidences of the child having died before birth have been sought in the cessation of the intra-uterine movements and the sounds of the foetal heart, and in certain changes in the mother, such as a tendency to fainting, nausea and vomiting, loss of appetite and foul breath, a dull, pale and dejected look, a sense of pressure upon the bladder and rectum, or of the falling of the contents of the womb from side to side, or, finally, the discharge of meconium or blood or the protrusion of the umbilical cord. But however probable these phenomena may render the death of the child, they do not demonstrate it.

More certain signs are furnished by the condition of a child born dead, provided its birth have taken place three days or more previous to its expulsion from the womb. These will be described in another place.¹

§ 109. In order that the reader may have a clear view of the evidence required to establish the fact that a child was born alive, it will be necessary to prefix to it a comparative sketch of the stillborn child and that which is born living. The visceral and other changes which indicate that a child has survived its birth, derive all their importance, as evidence, from a contrast with the condition and peculiarities of the same organs in the foetus : and the degree to which the change has been accomplished, corresponds in general with the energy and extent of the new functions. Hence, before we can safely determine that a new-born child has been criminally destroyed, we must be prepared to show, as a necessary preliminary, and beyond the shadow of a doubt, that the essential foetal characteristics no longer exist.

§ 110. *A child which is born dead*, having perished immediately before its birth, will be usually found, in medico-legal cases, owing to the hurry of concealment, to be still covered with the sebaceous secretion called *vernix caseosa*. Its hair is closely agglutinated ; its ears lie closely to the head ; the eyes are closed, and the eyelids when raised do not remain open. The mouth also is closed, and a drop of watery blood is often seen trickling from the nostril. The

¹ See title "Abortion," in index.

thorax, being unexpanded by respiration, appears flat and contracted, and the remnant of the umbilical cord has a fresher look than in a child which has lived for a few hours. The trachea is flattened, and often contains a viscid mucous secretion. *The lungs* lie in the posterior part of the thorax, and the rest of this cavity is often filled with a yellowish fluid of a slightly glutinous consistence. They are of a brownish-red color, more or less spotted in some cases, have a granular structure, and do not crepitate upon incision. Their length is greater than their breadth, and their edges are rounded. Their absolute weight is less than after respiration has occurred, since upon their expansion by this process, an active circulation of blood takes place through them; but their specific gravity is greater, their vesicular structure being undistended with air.

§ 111. A child which has been *born alive* presents the following characteristics; the period of survivance, the mode of death, and the time after it, at which the examination is made, have of course a considerable influence upon these. As a general rule, however, if the body be fresh, the remains of the *vernix caseosa* will be found under the armpits, behind the ears, etc., the hair will be dry and clean, the ears not so closely applied to the head as in the stillborn child, and the eyes remain half open, in spite of all efforts to close them. The swelling upon the back of the head which is common in new-born children (*caput succedaneum*), in whom the head has been the presenting part, is far more marked in the child which is born alive than in the stillborn; provided death has occurred before the expulsive pains of labor have begun. In the one case, it also contains a glutinous bloody serum, while in the other, the small quantity of liquid effused is colorless. The thorax is higher and more arched than in the foetus, and the diaphragm is depressed in a corresponding degree by the expansion of the lungs. As a general rule, according to Casper, the highest level of the diaphragm will be found between the fourth and fifth ribs in stillborn infants, and between the sixth and seventh in the living.

§ 112. The *umbilical cord* affords more valuable proof of extra-uterine life, as well as of the period of its duration, than any other of the external marks. It is generally of a bluish pearly-white color, of the thickness of a finger, and within twelve to twenty-four hours after birth, loses its polish and becomes dry and flaccid. The process of desiccation begins at the severed end, and in the course of twenty-

four hours reaches to within half an inch of the navel; this portion of it still remaining pulpy and of an amber color. About this time the skin of the abdomen, around the attachments of the cord, becomes red and swollen, and is pushed up around it in the shape of an inverted cone. During the second and third days the cord dries gradually away, becomes twisted and flattened like a ribbon, while the preparatory stage of separation is seen in the suppurative process which attacks the still moist portion by which it remains attached to the navel. On the fourth day, the cord is found to have acquired a yellowish-brown or black color, and in those parts of it not traversed by the umbilical vessels has the transparency and appearance of glue. The separation takes place more frequently on this than on the third day, but the time of its falling off is subject to great variation. According to the observations of Dr. Elsässer,¹ out of one hundred and thirty cases, it occurred—

On the 4th day in 10 cases, on the 7th day in 16 cases, on the 10th day in one case.

| | |
|--------------|-------------|
| “ 5th “ 40 “ | “ 8th “ 5 “ |
| “ 6th “ 55 “ | “ 9th “ 3 “ |

Cicatrization of the navel is generally complete by the fourteenth day.

§ 113. The process of desiccation above described is not invariable. Occasionally where the navel string is thick and pulpy, instead of withering and drying away, it will putrefy, even in the healthiest children. Elsässer has often made this observation in his hospital at Stuttgart, and the fact is fully confirmed by the observations of Sömmerring and Osiander.² Moreover, the process of desiccation is not confined to the cord of living children alone. In two stillborn children, Elsässer found the cord still remaining on the fifteenth and twenty-eighth day respectively after birth. It had undergone complete desiccation into a horny substance, while the bodies of the children were at the same time considerably advanced in putrefaction. Pieces of umbilical cord cut off and exposed to the open air, at 40° to 60° Fahrenheit, underwent the same withering and desiccating process as in the living child, and without the least foul smell. These observations may appear to invalidate the statement of Billard, which has been generally accepted as correct, viz., that the desiccation of the cord is an act of vitality, and consequently cannot and does not

¹ Henke's Zeitschrift, 1852, 4 Heft. p. 262.

² Über die Nabelbrüche. Lehrbuch für Habammen.

occur in the stillborn child. That they do not, however, materially affect its truth is evident, when we reflect that the process in the living child commences immediately after birth, and is completed generally within three or four days, whereas, in these observations, actual desiccation did not commence until much later, in one case on the ninth day, and in the other as late as the twentieth day. Furthermore, in neither case was there any indication of the cord becoming detached, a process which is alone of no trifling significance, both as evidence of life and of its duration. Hence, the withering and desiccation of the cord give a fair presumption that the child has lived and the degree to which the process has advanced, a valuable indication of the length of time it has survived its birth.

§ 114. Several other subordinate signs of live-birth may be alluded to before we consider those derived from the condition of the lungs. One of these is *suggillation*, or a discoloration resembling a bruise, and which has been held to be a proof that respiration occurred. But it is now admitted to furnish no reliable evidence of life after birth. The same remark is applicable to the difference of color, which, it is said, theoretically, must be presented by *the blood* in the opposite cavities of the heart. The absolute or relative weight of the *liver* is also a fallible test. For although it is true that this organ diminishes in size in proportion as the lungs assume their function, yet it is impossible by its means to determine in any particular case in what degree, if at all, the lungs have expanded, because the degree of contraction of the liver, not being referable to any fixed standard, can neither be measured nor estimated. The discharge of meconium, or of urine, as tests of breathing, are also unreliable.

§ 115. Of late years great importance has been attached to the condition of the centre of ossification in the lower end of the thigh-bone, which, it is claimed by Casper and other authorities, presents a very reliable criterion of the age of the new-born child.

The value of this sign was first pointed out by Beclard, Ollivier, and Mildner. Casper gives a table of one hundred and twenty-five cases in which he investigated the condition of the osseous nucleus, and as the result of these observations says:—

“a. When there is no yet visible trace of the centre of ossification in the inferior femoral epiphysis, then the foetus can be no more than from thirty-six to thirty-seven weeks old.

“b. The commencement of this osseous nucleus, which is at first

about the size of a hempseed or the head of an ordinary fly (half a line), indicates a foetal age of from thirty-seven to thirty-eight weeks, supposing the child to have been stillborn; in the opposite case the child may have been born alive before this time, without any osseous nucleus, which then becomes developed during its extra-uterine life. In rare instances of unusually retarded development, a foetus of forty weeks may exhibit only a trifling commencement of this nucleus.

"c. When this osseous nucleus possesses a diameter of from three-quarters to three lines, it indicates that the foetus must have attained a uterine age of forty weeks, always supposing of course that the child has been stillborn. In one instance of unusually retarded development, with defective ossification of the skull, of a girl born perfectly mature, we found no osseous nucleus.

"d. We may conclude that the child has lived after its birth, when the osseous nucleus measures *more* than three lines. But, on the other hand, an osseous nucleus of less than three lines does not prove that the child has not lived."¹ This symptom is only regarded as confirmatory by Casper, and as possessing especial value from the fact of the resistance it offers to putrefactive change. Voltolini² reports an instance of exception to this rule where the nucleus measured four and a half lines, but in which the child died immediately after birth.

Another, and so far as we know, an entirely new sign of respiration having taken place has reference to the condition of the middle ear. Dr. Gelle³ says, that, before respiration it is filled with a gelatinous tissue, which is traversed by capillaries, which is not removed by a stream of water, and which is recognisable twenty days after death. Upon respiration being established, this tissue, which is apparently ædematous mucous membrane, undergoes very rapid shrinkage and absorption. Attempts to induce artificial breathing, cause air to become mixed with the foetal tissue, but there is not the shrinkage from absorption. Should further observation confirm this observation it will furnish valuable assistance in making a diagnosis in these cases.

§ 116. The *lungs* are the source from which the most reliable proof of live-birth is derived. In the child which has perfectly

¹ Casper's Forensic Medicine. New Syd. Soc. Trans., vol. iii. p. 27.

² Casper, vol. xvi. Part I.

³ Lyon Medicale, February, 1877, Obstetrical Journal of Great Britain and Ireland, 1877 and 1878, p. 631.

respired, the lungs occupy a larger space in the thorax than in the stillborn foetus. They fill up, in general, its cavity completely, and partly cover and conceal the pericardium. Their color is of a pale red, shading into blue on the posterior surface, and becoming brighter upon exposure to the air, or else irregular light-red spots appear upon a bluish-red ground. This gives them a marbled appearance, a peculiarity which cannot be given to foetal lungs by inflation. Their edges are sharp, here and there curved inwards or projecting in tongue-like processes. They feel tough but not solid when handled, and retain slightly the impression of the finger. They crepitate also when pressed or cut, and upon incision yield a small quantity of frothy blood. They are heavier than the foetal lungs, but specifically lighter than water, floating upon it both with the heart and thymus gland attached, and also when cut to pieces. When pressed between the fingers under water, air bubbles rise from them to the surface. The thorax is wider and more arched than in the foetus, and the diaphragm is lower than before respiration, its convexity not reaching above the seventh or eighth rib. As the conditions thus described belong to lungs which have fully respiration, a less perfect degree of them may be expected to be found when the respiration has been incomplete, and cases may even occur in which very small portions only of the pulmonary tissue have been penetrated by air, and consequently are capable of floating when subjected to the hydrostatic test.

The condition of the *larynx* before and after breathing is not the same. In the former case it is narrower, is occupied by mucus, and is closely in apposition with the epiglottis; but in the latter this covering no longer closes the opening to the larynx. None of these conditions, it will be observed, affect the question *when* the child breathed? They are equally consistent with breathing before and after birth.

§ 117. Certain changes take place in the *foetal channels* for the circulation of the blood, upon the occurrence of respiration. As, however, these changes are gradual in their nature, they can hardly with propriety be enumerated among the signs of live-birth. They are only considered in this place from the fact that they *commence* at birth, although not perfected until a later period. From the cases reported by Elsässer,¹ it will be seen that the

¹ Henke's Zeitsch., 1841 and 1852.

obliteration of the foetal channels occurs in a very indeterminate manner. In forty-eight out of fifty-two mature stillborn children they were all open except in four, in which the *foramen ovale* was closed. In ninety-two who died in the first month, they remained open in two-thirds. Later researches on a still more extensive scale by the same indefatigable author, prove, as the result of the examination of three hundred and seventy cases, the little reliance which can be placed on so variable a test. In illustration of this fact, we may remark that in one stillborn child the *ductus venosus* was found closed, and in a child which lived only a quarter of an hour, the *foramen ovale and ductus arteriosus were both closed*. On the other hand, in a child thirty-nine days old, he found *all* the foetal channels remaining open. Dr. Norman Chevers¹ substantiates this statement by the facts which he has collected respecting the frequent contraction and obliteration of the *foramen ovale* and the *ductus arteriosus* before birth. It is evident that if but one authentic case exists in which any of the foetal channels have been found closed at birth, it is enough to throw doubt upon any case in which its closure is assigned as a proof that the child must have survived its birth. Moreover, the continued patency of these channels is of still less importance in a medico-legal sense than their closure, since the *foramen ovale* and *ductus arteriosus* are found open in certain cases in adult life. We have ourselves elsewhere brought abundant proof of this fact.²

§ 118. Professor Bernt,³ of Vienna, has endeavored to determine, by means of the progressive closure of the *foramen ovale* and *ductus arteriosus*, the period during which the new-born child has survived, and his views have heretofore met with considerable attention, and been adduced as authority. He says: "1. If the child has lived only a few seconds, the aortal end of the duct appears contracted, and the vessel, instead of being cylindrical throughout, acquires the form of a truncated cone. 2. If the child has lived for several hours or a whole day, the duct becomes again cylindrical, although shortened and contracted in diameter. Its size is about equal to that of a goose-quill; it is, therefore, much smaller than its root, and about as large as either of the two branches of the pulmonary artery, which have in the mean-

¹ Med. Gaz. xxxv. and xxxvi.

² On Cyanosis. Am. Journ. Med. Sci., July, 1844.

³ Das verfahren bei der ger-med. Ausmittelung zweifelhafter Todesarten der Neugeborenen, von Joseph Bernt. Wien. 1826. Vide Taylor Med. Jur., p. 319.

time become increased in size. 3. If the child has lived for *several days* or a *whole week*, the duct contracts to the diameter of a few lines, about equal to a crow-quill, while the two branches of the pulmonary artery are equal in size to a goose-quill. 4. The duct is met with, perfectly closed, and quite impervious at a much later period, *i. e.*, after the lapse of a very uncertain number of weeks or even months." That these phenomena are far from being constant is attested by the experience of other writers¹ as well as by my own. I have never succeeded in finding the peculiar condition of the arterial duct, under the circumstances described by Professor Bernt. As has been before stated, the great irregularity in the process of obliteration, renders any dependence upon signs, which are at least neither constant nor well marked, highly fallacious. In fact, the alteration in the form and calibre of the foetal channels is not noticeable immediately after birth; the closure of the foramen ovale, and the obliteration of the several canals, is gradual; they are not closed in any determinate order, although as a general rule, the foramen ovale is the last to be obliterated. These signs are, therefore, too inexact to be depended upon as proof of respiration having taken place, and have, at most, only a secondary importance in the question as to the period of survivance.

§ 119. We have now to consider the characteristic marks by which a child which has respired *imperfectly* may be known from one that has not breathed at all, and also the pathological and extraneous causes of imperfect respiration.

The external aspect of a child which has breathed imperfectly, is not strikingly different from that of one which has fully respired. During its life, such a child will exhibit signs of feebleness; its cry will be weak and whimpering, its color pale, and its movements languid. If the imperfect expansion of the lungs be due to compression of the head or neck, owing to a tedious labor, or from some obstacle to delivery, the surface will be found of a livid hue, especially the face, and the child will gasp for air. In the lungs, however, will be found the principal indication of incomplete respiration. They will not reach as far forward as the pericardium; the brownish-red color of the foetal lungs will be replaced, in part only, by the lighter and clearer red due to the presence of respiration, and these aerated por-

¹ *Vide Elsässer.* Also Taylor, loc. cit.

tions will be found chiefly in the upper lobe of the right lung, owing to the size of the bronchial tube which opens into it being larger than that on the left side. These portions will float in water, while other parts of the pulmonary substance will sink, and the degree of buoyancy of the whole lung will depend upon the amount of air contained in it. As a general rule, it may be stated that a very small quantity of respired air is sufficient to cause the whole lung to float.

§ 120. The principal pathological cause of imperfect respiration is the condition called by Jörg, who first correctly described it, *atelectasis*. This word means *defective expansion*, and is appropriate, since a portion of the lung remains in the foetal condition. We borrow the following accurate sketch from the valuable work of Dr. J. F. Meigs, on the Diseases of Children, p. 115: "In congenital atelectasis, the parts of the lung most frequently affected are the posterior portion and lower edge of the inferior lobes, the middle lobe of the right lung, and the languette and lower edge of the upper lobes. In some instances, as in one examined by myself, the greater portion of the lower lobes of both lungs, while in others still larger portions of these organs, have been found to present this condition. The imperfectly expanded portions of the lung are of a dark red or purplish color, and are diminished in size, so as to be depressed below the level of the healthy parts. They are solid to the touch, and yet they have not lost their cohesive properties, as they are neither friable, easily torn, nor readily penetrable by the finger, and no air bubbles are seen in the fluid squeezed out by pressure; they sink when thrown into water. They, in fact, resemble exactly the foetal lung. The most convincing proof of the real nature of this condition, is obtained by the inflation of the lung. When this is done, the depressed, hard, and dark-colored portions, unless the subject from whom the specimen has been taken may have lived long enough to have allowed the different tissues of the lung to become adherent, rise to their natural level, become elastic, soft and crepitating, and change, under the influence of the entering air, from a dark and livid tint, to the rosy or pink color of healthy pulmonary tissue."

§ 121. The distinction between this condition and that of hepatization of the lung from inflammation must at once be evident to the physician. The only similarity is found in the increased density of the inflamed lung, in consequence of which it sinks in water. But we need hardly remind the reader that the occurrence of pre-natal or

congenital pneumonia is very questionable, and that its immediate development after birth must be excessively rare. Should it, however, exist, it will not be difficult to distinguish it from atelectasis, except perhaps in those cases where a portion of the lung still remaining in the foetal condition is attacked with inflammation. Such a case, however, would have no importance in a medico-legal point of view, since the phenomena observed on trial of the hydrostatic test would not be affected by it. Pneumonia attacks indifferently all portions of the pulmonary structure, but preferably, perhaps, the inferior and lower parts. In atelectasis, the parts affected are usually the margins of the lobes, or those portions most remote from, or not so readily accessible by, the air. The color of the hepatized portions of the lung is of a yellowish or mahogany red, the surface is homogeneous, the contours of the vesicles are not visible, the hepatized structure is granular and friable, and, upon incision, there exudes from the surface a thin sanguinolent pus.¹ Finally, it cannot be inflated, the vesicular structure having become consolidated by a plastic effusion; whereas, in the case of atelectasis, the lung being merely in the foetal condition, readily expands upon the insufflation of air.

§ 122. The most interesting *causes of imperfect respiration* are those which act by impeding the free access of air to the lungs. They may be divided into two classes, according as they act *before* or *after* birth.

The fact that respiration may take place *before* birth, comes to us attested by too respectable authority to be discarded as fabulous. However improbable it may seem that a child should breathe and cry while yet in its mother's womb, and however much the establishment of the possible occurrence of this phenomenon may perplex the question of infanticide, rendering evidence apparently the most convincing of no avail, we cannot hesitate to admit that this singular fact has been really observed. We find few writers at the present day denying it. It is reported that Velpeau has said that "he believed it, since it was asserted by learned and credible men, but that he would not believe it if he observed it himself." We subjoin the following cases in illustration. The first is related by Marc,² as com-

¹ Legendre, Maladies de l'Enfance, Paris, 1846; Jacquemier, Accouchemens, vol. ii.

² Dict. des Sciences Médicales (en 30 vol.), art. "Infanticide."

municated to him by Dr. Henry. "The 10th of October 1824, I was desired by M. Jobert to assist him in an *accouchement* in which the pelvis was deformed in such a manner as to interfere with the delivery. Madame G—— was twenty-seven or twenty-eight years of age, and of a good constitution. Her two previous pregnancies were unfortunate; in both she miscarried. Upon our arrival, we found her in great suffering; the membranes had broken about forty-eight hours previously. I found the head of the child above the superior strait, the occiput turned to the right iliac fossa. The parietal bones alone had descended into the superior strait, and projected slightly into the pelvis; the *os uteri* was open to the extent of two inches. The deformity of the pelvis consisted in a very great prominence of the sacrovertebral angle, and absence of curvature in the pubis, so that the antero-posterior diameter was diminished one inch, while the transverse was increased to the same extent. M. Jobert and I concluded to turn the child; but, however, as the head did not appear to be of a large size, we hoped to be able to disengage it by means of the forceps. This instrument was applied. At the moment that Dr. Jobert commenced to make traction, the foetus cried distinctly for a dozen seconds, so as to be heard by all present. The head remaining impacted, in spite of all our efforts, the forceps were removed. While we were conversing upon the necessity of performing the operation of version of the child the cries were again heard as distinct as the first, which could only be the result of several inspirations. And again, when I introduced my hand to search for the feet, in slipping it over the left shoulder, the foetus, for the third time, gave vent to several cries, not so loud as the first, but sufficiently so to be heard by all the persons present. The delivery was accomplished with a great deal of difficulty, and the child breathed no longer; still, as the pulsations of the heart were pretty strong, we tried various means to restore it to life, and I endeavored to inflate its lungs. Our efforts were, however, of no avail, and the circulation ceased after a few minutes. I regret my inability to describe the condition of the lungs; but of what importance could it have been, as I had already introduced air into them?"

Landsberg gives a case of *vagitus uterinus* which occurred in his own practice. The first stage of labor had been unusually protracted, lasting, indeed, for nearly a week. At last, however, the membranes broke, and the child presented in the first position of the head. "At

this time I, as well as some women standing at the bed-side, heard plainly repeated cries of a child, as if one were covered by the bed-clothes." This was not the case, however; the room was searched, to ascertain if, perchance, a cat could be found, and finally all convinced themselves that the sounds really came from the yet undelivered child. The labor was brought to a termination by the application of the forceps. "The child was apparently dead, but soon revived, and is now living."¹

§ 123. No mistake could be possible in the following case, reported by Dr. Kennedy, formerly Master of the Dublin Lying-in Hospital. He says: "I was called up one night by an intelligent pupil in the hospital, who informed me that a very strange sound was observed to come from a patient in labor, resembling exactly the whine of a child. On going into the labor-ward, I found the nurses and pupils surrounding a patient's couch, with outstretched necks, listening with great intensity and amazement; and on approaching within about six feet of the bed, I distinctly heard a low moaning whine, resembling the faint and painful cry of a delicate seven months' child; this became more distinct the nearer I approached the patient, and there could be no doubt whatever that it came from the abdomen of the woman on the couch, however produced. Still sceptical, I applied the stethoscope, when the fact was proved beyond a doubt, as not only the cry mentioned, but the labored respiration of the foetus was perfectly audible. A vaginal examination was instituted, and the head was found presenting, but high in the pelvis. The parts were only partially dilated, although the membranes were ruptured, and the waters had drained off shortly before. This woman was not delivered for four hours, and the above phenomena were observed by several of the pupils up to the time of the child's birth. The patient's name was Morell; the date of her delivery, 2d of December 1830."

§ 124. Two other cases, of more recent occurrence, are related.²

¹ Neue Revision der Lehre von der Athemprobe. Henke's Zeitsch. Erg. Heft. 38, 1849.

² Brit. and For. Med. Chir. Rev., January, 1850, from Med. Zeitung, Nos. 20 and 30. Another case has been still more recently reported by Dr. Knüppel. In consequence of a cross position, the child was turned, during which operation vagitus was distinctly heard. It was, however, born dead. The lungs were of a pale red color, filled the chest completely, crepitated on incision, and swam in water. Canstatt's Jahresbericht für 1853. VII. Bd. p. 19.

One of these occurred to Dr. Falkenbach, who, during the operation for turning for a cross birth, and while the child was undoubtedly within the uterus, heard it cry loudly several times, as did other persons in the room.

The other case is of still more importance, and occurred also during an attempt at version. The tone of voice was like that of a new-born child, only dull, as if it came from a cellar. It continued crying at intervals for two or three minutes. After this, delivery progressed rapidly, until the shoulders arrived in the pelvis, which was rather narrow, while the child was a large one. The child was born dead, beyond recovery. Its cries, while in the womb, were heard by three other people in the room, as well as by the midwife, who was hard of hearing. The chest was examined twenty-four hours afterwards, and was found to be well expanded. The lungs partly covered the pericardium. They were removed, in connection with the heart and thymus gland, and being placed in a basin of cold water, *swam* completely. The lungs were of a bright-red color, with bluish spots here and there. They crepitated on incision, and some foam and a little blood flowed out. When cut under water, large air-bubbles rose to the surface: not the smallest portion of the structure sank. This last case is, except that in note,¹ we believe, the only one in which the lungs, in a case of uterine vagitus, have been submitted to the hydrostatic test; and hence, from it, we have undoubted proof of the possible occurrence of uterine respiration, and an increased probability of the observations in the previously related cases having been accurate. Two cases are related by Kirby,² and another by Kristeller.³ In the latter, resuscitation was accomplished after apparent death.

§ 125. We have assumed that uterine respiration must be *imperfect*, a position which seems to be contradicted by this case; but we find it stated by the author that "the air cells of the periphery had not become completely filled with air," a fact which we will not undertake to reconcile with the statement that no part of the lungs sank in water.

§ 126. The extreme rarity of uterine and vaginal respiration and *vagitus* is evident from the few authentic cases upon record, as well as from the incredulity with which the fact has been received by some

¹ Ante, § 124, p. 90, note ².

² Bayer, Austzl. Intell. Bl., 1865.

³ Prag. Vjhrsschrft, 88, p. 121.

authors. Moreover, certain obstetricians of most extensive experience state that they have never witnessed this phenomenon, and Baude-locque and Capuron declare that even in cases where the face and mouth of the child presented at the vulva, giving a favorable opportunity for the access of air, they have never observed it. We are not able to define the causes which favor its occurrence in some cases and not in others, nor explain how the air could gain access to the lungs in cases like those above narrated, and in others which might be referred to. All that can be safely asserted is, that this phenomenon never occurs before the rupture of the membranes and the dilatation of the mouth of the womb, and that it has been observed, as yet, only in tedious labors, or when the hands of the accoucheur have been introduced to assist the delivery. Dr. Beck relates two cases in which it was distinctly perceived under this latter contingency. It is not, however, a necessary element for its production. As *vagitus uterinus* has only been noticed in lingering and assisted labors, which characters hardly ever pertain to concealed deliveries, Casper thinks that this disputed physiological rarity need not enter into the question which a medical expert is called upon to answer.

§ 127. Another, and in its practical bearings more important condition, under which imperfect respiration may take place before birth, is after the delivery of the head, while the body yet remains in the vagina and the womb. It is undeniable that in this position the child often breathes and cries. The delivery of the body may be retarded by various circumstances, the principal of which are a too great size of the shoulders, a sudden cessation of the expulsive pains, and compression of the neck of the child by the umbilical cord. The fact, as above stated, is beyond all cavil, and Ritgen, a German obstetrician of high standing, from the frequency with which he has observed it, considers it not even exceptional. It will be readily seen how much doubt this fact may cast upon the question, whether the child has been born alive. It may breathe before it is fully born, and yet, as it is not accounted by the law to be born until *fully expelled* from the mother, fatal violence exercised upon it in this situation has been adjudged not to constitute the crime of infanticide. We shall allude more in detail to this fact under "*Causes of death in new-born children.*"¹ In the same place will be found an account

§§ 149 *et seq.*

of those causes of imperfect respiration which act *after* birth. It sometimes happens that after the delivery of the head of the child, and after it has breathed and cried, its respiration is impeded, and may be arrested by the pressure of the umbilical cord encircling the neck. The cord may be wound several times around the neck, so tightly as to render its disengagement without severing it, impossible, and hence, after the delivery the child may be incapable of resuscitation, and, in some rare cases, even bear upon its neck the marks of strangulation, and in its lungs the evident signs of its having respired. If, under such circumstances, the birth is not witnessed by a competent person, suspicions of having inflicted a violent death upon her offspring may unjustly attach to the mother.¹

§ 128. *Tests of live-birth.*—The most important of the proofs of live-birth, which, from their general application, have been called “tests,” are derived from an examination of the absolute and the specific weight of the lungs. Although the data yielded by them are said to prove *life*, they do so only incidentally, by proving respiration; and although, in criminal practice, it is requisite that the fact of respiration should be established, yet it is important to bear in mind that there may be *life without respiration*. The circulation may go on, and the child may make various muscular movements, after it is separated from the mother, without respiring. Sometimes, owing to congenital feebleness, or to its being in an asphyxiated condition, it makes no effort to breathe; and again, all its efforts may be fruitless, from the obstruction of the fauces and larynx with viscid mucus. Hence, paradoxical as it may seem, a child may live and die without having breathed. In such a case, the lungs will, of course, reveal no trace of respired air.² The attempt too strictly to define the essential conditions of life has led to some absurd conclusions. In Germany, a distinct vocal sound is required

¹ *Vide infra*, § 150.

² This fact was urged as an objection to the hydrostatic test by the Wittemberg Faculty (Valentin's Pand. Med. Leg., p. ii., sec. vii. chap. 12, p. 583, ed. 1701), at the very beginning of its application to medical jurisprudence. We have ventured to depart from the custom of medical writers on this subject in treating of it under this head, because the object of the hydrostatic test is to ascertain whether the child has breathed, and not to determine the fact of its having lived without respiration.

by law as the evidence of life. But this appears to be modified in practice by the substitution of breathing for vocal sound, and the doctrine is accepted that respiration and life are reciprocally evidences of one another. According to this doctrine, intra-uterine life is not life in the sense of life after breathing. Plants, and those animals which breathe by the skin or by gills, do not, according to it, really breathe. But if we admit that breathing essentially consists in the act or acts by which the effete circulating fluids of a living creature are renovated, we shall see that life is consistent, not only with very dissimilar modes, but also with very irregular degrees of that renovation. The foetus in utero, while still inclosed in its membranes, has its blood renovated by juxtaposition with that contained in the maternal blood vessels, and thus, indirectly but substantially, it breathes through the lungs of its mother. Although the mechanism of its respiration is different from that which will exist after birth, its essence and effect are the same. Again, even in the adult, examples are constantly met with of life without perceptible breathing, as in syncope and trance, states in which it is true that life is probably sustained by the exchange of the foul air in the lungs with the pure external air, under those laws which regulate the diffusion of gases. Yet in the popular sense there is no respiration, although there is life, and a life which, indeed, is generally manifested by the sound, however feeble, of the heart's pulsation. The new-born child, therefore, although it presents the aspect of death, is not necessarily dead; its near approach to lifelessness may even become the means of saving its life under circumstances which would infallibly have produced suffocation and death, had respiration been complete.¹

§ 129. The following may serve as illustrations of the statement just made. Weese reports the case of a female who was rapidly delivered of a child in a tub, and, believing it to be dead, buried it in a sand-pit, where it remained for half an hour, but was then disinterred and restored to life. In another case, at Berlin, the child, supposed to have been born dead, was buried for the space of an hour, but was resuscitated. In a third instance, a child apparently born dead, and so considered after an hour vainly spent in efforts to resuscitate it, was then abandoned for several hours, after which it

¹ See as to legal questions involved, *infra*, §§ 860 *et seq.*

was inclosed in a coffin and placed in a cold chamber (it was the month of January), near an open window. Twenty-three hours after its birth the body was quite cold, but free from discoloration or stiffness. Owing to the latter circumstance the heart was examined, and, being heard to pulsate, renewed attempts at resuscitation were made. But finally all signs of life ceased. On dissection the lungs sank in water both in mass and in fragments. Another instance is still more remarkable, from its result. A woman buried her illegitimate child, which she supposed to be stillborn, nine inches under ground, and with the face downwards. It remained thus between four and five hours, when it was exhumed, resuscitated, and lived three days.¹ A case nearly identical with this is referred to by Briand, who, however, states that the life of the child was preserved.² It is, then, quite possible that life may have existed in spite of every reasonable presumption of its absence, founded upon an inspection of the child both before and after its certain death.

§ 130. If the argument should ever be used in any case of infanticide, that the violence was inflicted upon a child which had lived without breathing, it would have to be sustained by other testimony or evidence than that of a medical expert; since there is no medical proof of extra-uterine life, independent of respiration. Hence, the commission of infanticide, by submerging a child in water before it has breathed, or the exclusion of air from it in any other way in which no external mark is left, deprives the medical examiner of the means of deciding whether the act was committed upon a living child; because, we repeat, the lungs remain in the same condition after as before birth, provided respiration has not taken place, and, in the short interval of existence possible under such circumstances, no other change could occur which could be relied upon as an indication of extra-uterine life.³ It would appear that the effort to breathe, although unsuccessful in inflating the lungs, may, nevertheless, modify the circulation of the blood so as to leave certain proofs of the fact. These, which were first pointed out by Tardieu,⁴ are what Casper has denominated *petechial suggillations*, and which he describes as capil-

¹ Maschka, Prager Vierteljahrs., 1854, iii. s.

² Médecine Légale 6ème éd., p. 209.

³ Henke's Lehrbuch, 12th ed., p. 341.

⁴ Annales d'Hygiène, 2ème sér., iv. 379.

lary extravasations of blood beneath the pleura and the lining membrane of the aorta and the heart.

§ 181. Liman describes these ecchymoses under the pleuræ and other serous investments, as varying in size from that of a pin's head to that of a hempseed; they remain attached to the serous membrane when it is stripped off, nor can they be removed by washing. Liman does not think, with Tardieu, that they are a certain sign of asphyxia, and, though most common in suffocation, they furnish no clue as to the mode of its production. Their occurrence is accounted for by the theory that the powerful inspirations overcome the resistance of the capillaries. While their presence is an important sign of death from suffocation, their absence does not furnish equally strong proof that death has not occurred in this way.¹

In a case quoted from Hecker, there was prolapse of the cord, and, the introduction of the hand to effect version of the child having necessarily compressed the cord, and thereby suspended the circulation through it, several inspiratory movements of the child could be distinctly felt. It was not, however, born alive, and extravasations like those just described were discovered on dissection. Similar observations have been made by Hohl, in cases of foot and breast presentation when the head was detained in the uterus or vagina; the inspiratory movements of the chest were frequent and vigorous, the children nevertheless were born dead, and the pleura and heart presented the ecchymoses referred to, and the lungs sank when placed in water.² It may naturally be inferred from what has now been stated, that, if any cause interrupts the foetal circulation during labor, an inspiratory effort will be made, and, if the mouth and nose of the child are still immersed in liquor amnii, this fluid will tend to enter the respiratory passages. Dr. Briesky has published four cases,³ in which the heart of the foetus was heard during labor, but life was extinct at birth. In all of them the air-passages were filled with liquor amnii more or less tinged with meconium. In the first case the cord had prolapsed, as in the example already cited, and had been subjected to pressure, so as to favor the inspiration of the liquid; in the remaining three an analogous cause within the uterus may be surmised to have existed, but could not be demonstrated. In all of these

¹ Casper, vol. xix. p. 73.

² Gericht. Med., i. 706

³ Prager Vier reijahrs, 1859, iii. 175.

cases extra-uterine life was rendered impossible by a physical obstacle in the lungs preventing the access of air to these organs.

§ 132. (1.) *Hydrostatic lung test (Doeimasia pulmonum hydrostatica).* This is an experiment in which the lungs of a new-born child are placed in a vessel containing water, in order to judge from their *specific gravity* whether or not the child has breathed.¹ Its first application in medical jurisprudence was made by Dr. Schreyer, of Zeitz, although the principle was known, it is said, by Galen. The experiment is conducted in the following manner. The lungs are carefully removed from the chest, with the heart attached or not, but always in connection with the trachea. They are then placed upon the surface of pure water. If they float, the evidence is very clear that they contain air, and the higher they float the more perfect has their expansion been. If, on the contrary, they sink to the bottom, the evidence is equally plain that they contain air to a very imperfect extent, if at all. In order, however, to judge fairly of their degree of buoyancy, and to ascertain how much and what parts of the organs contain air, a further investigation is required. The thymus gland, with the heart and pericardium, should be removed with care, to avoid injuring the pulmonary tissue, after which the lungs should be again put in the water. Each lung should then be tried separately, and finally divided into small pieces, and each of these thrown by itself into the water, before and after compression between the fingers. By carefully observing the results elicited by this experiment, satisfactory proof of the presence or absence of air in the lungs may be acquired. At this stage of the inquiry no further inference is allowable; we can neither say that the child has lived and breathed, because its lungs float on the water, nor deny that it has lived if they sink to the bottom of the vessel. And yet this experiment must always retain its great importance in cases of presumed infanticide. Restricted within its proper limits and sources of error properly guarded against, there is no medical test so simple and conclusive.² As Dr. Taylor remarks, "the law holds, under the decisions of its expounders, that respiration is only *one*, and not an exclusive proof of life."³

¹ Valentin, Pand. Méd. Lég., Par. ii. sec. vii. p. 502. "De infanticidio per pulmonum in aquam project. subsident. elidendo."

² De usu partium corp. human., lib. xv., cap. 6.

³ Med. Jurisp., 6th ed., p. 451.

§ 133. The objections made to the hydrostatic test are founded upon two facts:—

1st. That the air which gives buoyancy to the lungs may have been derived from other sources than natural respiration; and,

2d. That notwithstanding the absence of demonstrable air from these organs, the child may have lived. The sources from which the air may have been derived are, Putrefaction, Emphysema, and Artificial Inflation.

Putrefaction.—At an undetermined stage of putrefactive process, gas is disengaged by the decomposition of the blood contained in the lungs, and sometimes in sufficient quantity to give buoyancy to the whole or a portion of them.¹ The air thus evolved is, however, not contained in the pulmonary vesicles, but in the cellular tissue, and chiefly between the lobes and on their margins. Here it is seen collected in rows of bubbles, much larger than the air-vesicles, prominent, and easily disappearing under slight pressure. At the same time, the lungs present other signs of the putrefactive process, in their greenish color, diminished consistence, and fetid odor. The period at which the putrefactive vesicles are developed is not accurately known, and is influenced by circumstances, as, indeed, are all the other incidents of putrefaction.

§ 134. It is a fact, however, worthy of remark, that this process is set up later in the lungs than in most of the other organs of the child. This fact is attested by many writers, and particular stress is laid upon it by Dr. Casper. In four cases examined by this author, where the child's body was already greatly decomposed, the lungs retained their firmness and dark-brown color, and sank in water. In one case the heart and liver were both covered with putrefactive vesicles, and swam upon the surface of the water, while the lungs, which were firm and brown, sank to the bottom.² I have, myself, frequently found the lungs of new-born children entirely unchanged in color, consistence, and appropriate hydrostatic relations, when at the same time the brain was reduced to a mere pulp, the abdomen thoroughly putrescent, and the epidermis peeling from the whole body. The striking changes which attend the commencement of decomposition in the lungs cannot permit an error on the part of the examiner. Should the buoyancy

¹ As to questions of identity, see *infra*, §§ 620 *et seq.*

² Casper's ger. Leich. öff. 1 and 2 Hundert, Fälle 67, 68; 65, 66.

of the lungs be due to putrefaction, by the development of spurious air-vesicles upon the pulmonary tissue, the fact may be easily recognised, and ascribed to its real cause. Should, however, no signs of putrefaction in the lungs be found, and yet these organs float, the objection is theoretical merely, and not at all pertinent. The obvious inference is, that the objection cannot be urged, when there is no proof of its applicability to the case in hand. It is not unnecessary to press these apparently simple truths upon the attention of the reader, for every day's experience in forensic medicine attests the false importance attached to irrelevant objections. When the above-mentioned changes have supervened in the lungs, they can no longer be used in evidence, since the buoyancy of these organs may be due to air derived either from decomposition or from respiration. A discrimination between the two at this period is manifestly impossible.

§ 135. *Emphysema* was formerly distinguished from putrefaction, as a condition giving buoyancy to foetal lungs. It may safely be asserted that no such condition is found in lungs which have not respired. It is probable that the older authors mistook for it the appearances presented by putrefaction. Drs. Cummin and Lécieux¹ speaks of a "sort of contusion suffered by the lungs in difficult labors, to which they attribute the development of air in large vesicles on their surface," while the lungs presented at the time no signs of putrefaction; but these observations have not been confirmed by others. Mr. Taylor² says, that in examining the bodies of many stillborn children, he has never met with any appearance resembling what has been described as a state of emphysema, independently of respiration and putrefaction.

Toulmouche³ regards the occurrence of emphysema as very rare, and says, that when present, it is *never* sufficient to give buoyancy to the lungs of a *fœtus* which has not breathed.

Casper is equally decided, saying, "that as yet, not one single well-observed and incontestable case of emphysema, developing itself spontaneously within the foetal lungs, is known, and it is, therefore, not permissible in forensic practice to ascribe the buoyancy of the lungs of new-born children to this cause."⁴

¹ The Proofs of Infanticide, by Wm. Cummin, M.D., p. 61. Consid. Méd. Lég. sur l'Infanticide par Lécieux; *vide also*, Schmidt, loc. cit.; Versuch 32; S. 41 and 212.

² Loc. cit., p. 303, Am. Ed.

³ Ann. d'Hyg. xvi. 364 and xviii. 157

⁴ For. Med., N. Syd. Soc. Trans., vol. iii. p. 72.

§ 136. The last objection to the inference that the lungs must have respired if they float on water, is found in the fact that *Artificial Inflation* will cause the lungs to float. If the lungs of a stillborn child be fully inflated by means of a tube, they increase rapidly in volume and acquire a dirty yellowish-red color; when the insufflation is discontinued, they immediately collapse, but still retain enough air to enable them to float. The effect of strong pressure in expelling this air, is, according to my own experience, which corresponds very nearly with that of Dr. Guy, almost similar to that in lungs which have respired. Nothing short of a strong and continued pressure will cause them to sink; and the compression in the one case is so nearly what is required in the other, that the difference is practically unimportant. If, however, an attempt be made to introduce air into these organs, in the only manner in which it is important to consider its effects, viz.: by insufflation through the mouth of the child; the greater part of the air passes into the stomach, while a very inconsiderable portion, and sometimes none at all, reaches the lungs. Mr. Taylor says that he has had several opportunities of examining the lungs in children, where inflation had been resorted to, not for the express purpose of creating an objection to the hydrostatic test, but with the *bonâ fide* intention of resuscitating them. In some of these instances a tube had been used, in others the mouth. In the first case it was found, on inspection, that only about one-thirteenth part of the structure of the lungs had received air. In the second, no part of the lungs had received a trace of air, although inflation had been repeatedly resorted to; the air had passed entirely into the abdomen. In a third, attempts were made for upwards of half an hour to inflate the organs; but, on examination, not a particle of air was found to have penetrated into them. In a fourth, no air had entered the lungs; and in a fifth, although a small portion had penetrated into the organs, it was readily forced out by compression. In repeatedly performing the experiments upon dead children, the results have been very similar; the lungs, after several attempts, were found to have received only a small quantity of air.

§ 137. On the other hand, Schmitt, of Vienna,² has made numerous experiments, from which he has drawn the following conclusions:—

¹ Med. Jur., p. 305, Am. ed.

² Neue Versuche und Erfahrungen über die Ploucquestische und hydrostatische Lungenprobe, Wien, 1806.

1. That it is possible to inflate the lungs of stillborn or asphyxiated children.
2. That the insufflation succeeds easily and completely, if done in the proper manner, and if there is no mechanical obstruction to the entrance of the air.
3. That the inflation is imperfect and difficult, and even entirely fails, when the respiratory passages are filled with mucus.
4. That the increase of volume, the spongy texture, the rosy color, and the buoyancy of the inflated lungs, vary according to the degree of success of the operation.
5. That lungs properly inflated are crepitant, like those which have respired, and yield frothy blood on incision.
6. That inflation increases the convexity of the thorax.
7. That it does not increase the weight of the lungs in a child which has not respiration, and that, in the great majority of cases, the same relation exists between the weight of the lungs and the body after insufflation as in the foetus which has never breathed.

§ 138. The results obtained by Mr. Jennings¹ are equivalent to those of Schmitt.

Dr. Elsässer concluded, after a large number of carefully conducted experiments, that the insufflation of the lungs through and by the mouth is possible. We find, however, that he really succeeded only in one instance out of fifty-two cases, and in one case it is stated *that the child made six distinct efforts to respire.*²

§ 139. Dr. Browne, of King's College Hospital, endeavored to resuscitate a stillborn child by artificial respiration, having failed with other means. He closed the nostrils with the thumb and forefinger of the left hand, and grasped the breast and body of the child with the right. Placing his own mouth upon that of the child, he continued to breathe into it for ten minutes, imitating by pressure with his hand the natural movements of respiration. He failed, however, to revive the child. Upon inspection of the body, the lungs were found fully expanded, of a pale-red color, buoyant, and frothy upon incision. Cut into pieces, however, and subjected to compression, they sank in water.

¹ Trans. Prov. Med. and Surg. Association, vol. ii. p. 440.

² Untersuchungen über die Veränderungen. etc., durch Athmen in Lufteinblasen, Stuttgart, 1853.

Dr. Roth¹ performed this experiment upon a stillborn female child, twenty-four hours after birth. Having previously removed the anterior wall of the thorax, in order to observe the changes produced by the insufflation of air by the mouth, he saw that upon the first insufflation the lungs began to expand, and that they acquired a clear red color in spots upon their surface. By continuing the inflation, this color spread all over the lungs. At the same time the stomach became so distended with air, that he was obliged to discontinue the experiment, from the fear that this organ would burst. The difference between these lungs and those which had breathed, he states, consisted in the fact that their expansion was less, the color of a brighter red, and the buoyancy and crepitation less. He succeeded in expelling the air from them by compression, and then they sank in water.

§ 140. Our own opinion upon the possibility of a successful inflation of the *lungs in situ* does not differ from that of the most recent and best authorities upon the subject, viz., that the lungs cannot be fully inflated by this means in such a manner as to resemble, in their appearance and hydrostatic relations, lungs which have perfectly respired. Those cases where the resemblance appears to have been very close may be explained upon the assumption that the child was not completely passive under the experiment, but retained sufficient vitality to make, during it, and unperceived by the physician, one or more efforts at inspiration. That the lungs of a dead child can be wholly inflated *in situ*, and made to resemble those which have naturally and fully breathed, is, we believe, at variance with the experience of the great majority of those who have given their attention to the subject.

The fact that pressure will expel the air from lungs which have been inflated *through the mouth*, while no compression less than what would destroy completely the pulmonary tissue will avail to force it from those which have fully inspired in the natural way, is the chief and most reliable distinction which can be made between the two cases. The most reliable test of breathing, derived from an examination of the lungs, is, however, that which has been given by Briand and by Casper. However successful the inflation of these organs may be, their surface will never present the peculiar dark marbling described above as a sign of respiration, unless this act have been performed by

¹ Henke's Zeitschrift, 1850, 4 H.

the natural mechanism. The reason of the difference between the appearances in the two cases is a simple one. Natural respiration is an act which tends to create a vacuum in the lungs, and consequently to draw into them the blood of the pulmonary arteries which gives them the comparatively dark-bluish and marbled aspect alluded to; but artificial respiration, by which air is forced into the lungs, tends, by the pressure of that air, to exclude the blood, and consequently to render the color of the lungs still lighter than before. But in judging of the value of this test, it is important to recollect that its applicability is limited to cases in which the distension of the lungs is considerable. The less they depart from the foetal state, the less does its value become.

§ 141. It must be admitted, however, without the least reserve, that the effects of artificial inflation cannot be distinguished from those of *imperfect respiration*. Although the distension of the stomach and intestines with air is an inevitable accident in artificial inflation, it cannot be relied upon as a diagnostic sign, since it may be merely a cadaveric phenomenon. Its *absence*, indeed, in a case where it is supposed that these means had been used, would, of course, disprove the supposition. A distinction might, perhaps, be hoped for from the employment of Ploucquet's test, since the artificial filling of the lungs with air increases their volume alone, without altering their absolute weight; while natural respiration, being attended with a circulation of blood through the pulmonary vessels, increases their weight and volume together. But it will be seen further on that the results obtained by Ploucquet are too variable and uncertain to be used where a distinction of so delicate and momentous a nature is required. The question can be disposed of only in one manner. If other evidence can establish the presumption that artificial inflation has been attempted, the physician must then be ready to answer whether the results of his examination are such as to justify and support this presumption. But if, on the other hand, no such evidence is offered, we do not see how it can be required of the physician to take into consideration the possibility of a manœuvre which he knows can be effected only by skilful and careful professional management, and which, moreover, the nature of the alleged crime renders in the highest degree improbable. From the prominence usually given to this objection to the hydrostatic test, one might be led to suppose, as Mr. Taylor justly remarks, "that every woman tried for child-mur-

der had made the praiseworthy attempt to restore a stillborn child, although circumstances may show that she had cut its throat, severed its head, or strangled it while the circulation was going on."

§ 142. Casper coincides with those who maintain the very great difficulty experienced in successfully inflating the foetal lungs; and thinks that a distinction is very perceptible between lungs inflated naturally and those in which the effect has been produced by artificial means. He states the case as follows: "When we observe a sound of crepitation without any escape of blood-froth on incision, laceration of the pulmonary cells with hyperæmia, bright cinnabar-red color of the lungs *without any marbling*, and perhaps air in the (artificially inflated) stomach and intestines, we may with certainty conclude that the *lungs have been artificially inflated.*"¹

§ 143. It is asserted by Bouchut,² that, if the lung of an infant which has respired be examined with a lens, the surface of each lobe appears as a collection of very distinct rounded vesicles, each having a luminous point, which are wedged together and vary in size, while in the lungs of those stillborn no such appearances are present.

Guy³ does not hesitate to give the first and highest place among the tests of respiration to the development of the air-cells, which is very manifest to the naked eye. This development first takes place on the upper edge and concave surface of the right lung, and presents a very characteristic appearance. "If the lungs are fresh and full of blood, the air-cells assume the form of brilliant vermillion spots; if they contain less blood, or are examined some days after death, the spots are of a lighter color; and in children who have survived their birth some days they have very nearly the hue of the healthy adult lung." Their form is angular, not raised from the surface, and they are evidently in the substance of the lung near the surface. They are in general irregularly grouped, though sometimes arranged symmetrically.

§ 143 a. Having now examined the conditions which will cause the lungs of a new-born child to float when submitted to the hydrostatic test, it remains for us to notice briefly those which will cause

¹ For. Med., N. Syd. Soc. Trans., vol. iii. p. 68.

² L'Union, July 31, 1862, p. 211.

³ Principles of Forensic Medicine. London, 1868.

them to sink and to remain at the bottom of the vessel, as in the foetal condition. *Disease* of any kind which increases the density of the pulmonary structure will cause them to sink, or rather that portion of them affected thereby. *Pneumonia*, or inflammation of the lung, so increases the density of pulmonary structure as to cause it to sink in water. It is rare, however, that pneumonia occurs congenitally, and it does not necessarily involve the whole lung; hence portions of it may be found to be buoyant. It has been asserted that a very great *congestion of lungs* which have already respired will destroy their buoyancy, but this fact has been clearly disproved.¹ We need hardly say, that, if the structure of the lungs be so diseased that they will sink in water, the cause cannot fail to be evident. Reference has been previously made to that condition of imperfect expansion of the lung called *atelectasis*. Occasionally the lungs contain such a trifling amount of air, that it is not sufficient to float the whole of the organ, and life and respiration may exist without bringing about the usual changes in the pulmonary tissue. We are obliged, moreover, to admit, on the authority of credible writers, the fact that life and respiration may be prolonged for a considerable time, and yet on *post-mortem* examination, the lungs, either whole or divided, sink in water. Such instances have been met with by trustworthy German writers.² In two cases which came under Böcker's observation the children were born by the head, and without difficulty. Movements of the limbs, the sounds of the heart, and the pulsations of the umbilical arteries were perceived, but no act of breathing; and after death, which took place speedily, the lungs sank in water even when cut into small pieces. In a third case no movements were made by the child, but the heart and the cord pulsated for two minutes, and the lungs gave the same results, on being tested, as in the previous cases. The results have been strikingly confirmed by the experience of Dr. Taylor. He says:³ "I may add to these instances two which have occurred under my own observation. In one, the case of a mature male child, the lungs sank in water, although the child had survived its birth for a period of *six hours*. In the other, the case of a female twin, the child survived *twenty-four hours*, and after death the lungs were divided into thirty pieces, but not a single piece

¹ *Vide* Schmitt, loc. cit.

² Remer, Bernt, Schenck, Osianker, Meckel, Böcker.

³ Medical Jurisprudence, Am. ed., p. 300.

floated; showing, therefore, that, although life had been thus protracted, not one-thirtieth part of the structure of the lungs had received, from respiration, sufficient air to render it buoyant." Now, although these results conflict with general experience, and are not clearly explicable upon any known physiological ground, they must be allowed to have their weight. Hence, if a child's lungs sink in water, and no disease be found by which the fact can be explained, we cannot infer that the child has not lived, nor even that it has not breathed, although the respiration must have been exceedingly restricted. Hence, in this case the hydrostatic test can give us no positive proof of the non-occurrence of respiration. This certainly is a matter of regret; but although it does not always enable us to attain the truth, and detect criminality, it does not, on the other hand, cause the life of an innocent person to be placed in jeopardy. It is merely an imperfection in the test, and affords no ground for an objection to its application in other cases in which it undoubtedly is capable of affording positive and useful knowledge.

§ 143 b. Falk contributed an elaborate article to *Horne's Viertel-jahrsschrift*, x. p. 1, 207, upon the lungs of new-born children, the conclusions of which may be summarized as follows: (1) Color may vary from black to white. (2) In early foetal life they are pale red and become darker; but we cannot estimate uterine age from them. (3) When no air has been inspired, the color is dark blue, as a rule; when air has been inspired, bright red. (4) But the light may become dark and the dark colored light without furnishing evidence that the lungs are airless, or the contrary. (5) Consequently the marbling of Casper is not proof *per se* of extra-uterine life, though it always obtains a short time after birth. (6) More important is the fact that in the air-lung a network of vessels around the alveoli is perceptible, while the alveoli, being filled with air, look like pearly vesicles.¹ If this condition is met with in part of the lungs, it proves respiration, (?) as premature attempts at breathing rarely introduce air. (7) This mosaic marking can be made out in anaemia or plethora by a lens. (8) Anaemia of lungs is evidenced by a pale color, hyperæmia by a dark-blue color. (9) In hyperæmia the color is diagnostic between congestion and post-mortem hyperstasis. (10) Putrefaction produces a dark color in both air and foetal lungs, and the distinction between the two first becomes impossible from the formation of vesicles and the

¹ See § 143.

falling apart of the tissues from advanced decomposition. (11) White hepatization makes foetal lung brighter, like anæmic air lung, and the hydrostatic is the only test. (12) Red hepatization draws the two appearances together, and the color ceases to be a test. (13) The lungs do not change color much, and there is no characteristic tint immediately after birth. (14) When air has been introduced by artificial respiration, it looks much like an anæmic lung, and the proof of color is uncertain. Such cases are, however, rare in foro.

While we have thought it best to present the above as among the most recent contributions to the subject under consideration, we are very far from indorsing some of the conclusions of their author, and regard some of his diagnostic refinements as unlikely to be of value in medico-legal cases.

§ 144. (2) *Static tests* are founded upon the observation that the lungs of children who have breathed are heavier than the foetal lungs. This fact has been ascertained by direct experiment, and is attributed to the blood, which, as soon as the child makes the first attempt to breathe, enters the lungs. In proportion, therefore, to the degree of the pulmonary expansion will be the weight of these organs. Now, it is obvious that if a constant average weight of the lungs before and after respiration could be ascertained, drawn from numbers which fluctuated but slightly, it would afford a useful standard of comparison by which we could judge whether a child had really lived and breathed. For if, as was estimated by Daniel, the weight of the lungs after respiration was constantly augmented to the amount of two ounces, and this could be established as the general rule, there would no longer be any difficulty in deciding the knotty question of live-birth. Observations, however, have satisfactorily shown that no such constant average weight of the lungs exists. These organs in some mature stillborn children actually weigh *more* than in those who have enjoyed full and complete respiration, and in this respect the difference is not more singular than is the great variation in size and weight of the whole body in healthy children born at full time.

§ 145. The second form of the static test, advocated by Ploucquet in 1782, and usually named after him, is quite as uncertain as the foregoing one. It is founded on a comparison of the absolute weight of the lungs with the weight of the body. Ploucquet having made a few experiments respecting the proportion existing between them, fixed the average at 1.70 before respiration, and at 2.70 after it; in

other words, he considered that the lungs, after breathing, weighed nearly twice as much as they did before. The repeated and numerous observations since made by Jäger, Schmitt, Lecieux, Chaussier, Orfila, Taylor, Guy and Beck, have clearly proved that any constant ratio, like that assumed by Ploucquet, is illusory and inexact.

According to Elsässer, the congenital differences in the absolute weight of the lungs are far greater than those in the absolute weight of the body. Thus, in 68 stillborn mature children, he found the average weight of the lungs to be 13 drachms 18 grains. The *maximum* weight (in perfectly normal lungs) was 20 dr. 35 gr. The *minimum*, 8 dr. 35 gr. Hence the difference or variation was 12 drachms, which almost equals the average weight. The average weight of the body in these 68 children was 7 lbs., and the difference between it and the greatest weight did not amount to *one-half* of the average weight.¹

§ 146. The relative weight of the lungs and body varies in different individuals, according to sex, peculiarities of conformation, and other circumstances. Almost every author who has experimented with a view of ascertaining a fixed average ratio, has adopted a different one from his predecessor, and the conclusion appears to be generally admitted that the test is not reliable. In conclusion, we may remark, that if these static tests are not worthy of dependence in those cases where the child has *fully* respiration, still less are they to be relied upon where the function of respiration has been *imperfectly* established. It is in the latter cases, that, practically, the great difficulty of a correct judgment lies; the former are much more satisfactorily determined by the hydrostatic test.

§ 147. The following are the chief points which have now been demonstrated:—

1st. That, although respiration is conclusive evidence of life, it may take place previous to birth.

2d. That life for a brief period is compatible with absence of respiration.

3d. That none of the mere anatomical proofs of live-birth are satisfactory, when taken singly.

4th. That, even when combined, they fall short of demonstration.

¹ Loc. cit., p. 96.

5th. That the result of the hydrostatic test may (in some as yet unexplained cases, as where the lungs sink in water although the child has breathed) be negative in its character.

6th. That the hydrostatic relations of the lung afford evidence in reference to respiration which, especially when confirmed by the static tests, is exposed to few real sources of error.

7th. That the objections to the hydrostatic test are mainly theoretical.

8th. That the burden of showing their applicability rests with the objector.

From an analysis of the evidence furnished by an examination of the lungs in the cases which have been considered in the present article, Casper arrives at the following conclusions. A child may be regarded as having breathed during or after birth—

1. If the upper surface of the diaphragm is between the fifth and sixth ribs.
2. If the lungs fill the cavity of the chest more or less completely, or at least do not require a separation of the incised ribs to render them visible.
3. If the predominant color of the lungs is mottled by patches.
4. If the lungs on careful trial, are found to float upon water.
5. If moderate pressure of incised portions of the lungs causes a bloody froth to exude.¹

It has been proposed to draw certain inferences as to the life of the child from the contents of the stomach. If this organ contains milk, starch or sugar, there can be no doubt of its having lived after birth. In other cases innutritious substances have been found in it, affording an equally positive reason for concluding that the child was born alive. In a case reported by Märklin² of an infant's body found in the Rhine, its stomach, intestines and air-passages contained a certain quantity of the sand which the water of this river holds in suspension, and, although its lungs were completely empty of air, it was concluded that the sand could not possibly have reached the organs in which it was found without an active movement of swallowing, and therefore not without the child had lived.

§ 148. Schwartz and Krahmer have shown that when the circulation in the placenta is stopped in any way the foetus experiences a

¹ Gericht. Med. i. 767.

² Casper's Vierteljahrs. xvi. 26.

"besoin de respirer," and inspires. If the mouth has access to the air we may have vagitus uterinus, if not, liquor amnii, meconium, and vernix caseosa may be drawn into the lungs and stomach, as deglutition is generally isochronous with respiration; but if neither fluid nor air have access to the mouth, the effort to inspire results in drawing blood into the pulmonary and other intra-thoracic vessels with such rapidity that extravasations occur, chiefly as sub-plural ecchymoses, so that when we find these so-called petechial ecchymoses under the thoracic serous membranes, with the above mentioned foreign substances in the air-passages, we may safely conclude that the foetus was exposed, before birth was completed, to dangers which were likely to cause death, such as pressure upon the cord.

Böhr says that death may have thus resulted and yet the petechial ecchymoses may be wanting. By themselves they do not prove respiration. It would appear that they are in practice rarely combined with foreign substances in the air-passages, as blood is drawn most forcibly into the chest when no fluid, such as meconium, etc., has access to the mouth. Again, petechial ecchymoses do not prove death before birth, as they may be recovered from and death from other causes ensue; they are, however, more dangerous than the inspired fluids spoken of. Indeed meconium is found quite often below the bifurcation of the bronchia, *when looked for*.

It is evident that the examination of these points will clear up many cases in which infanticide is suspected. It may be safely stated that the highest authorities concur in regarding the *hydrostatic test* as uninfluenced by modern discoveries, and that when exceptions to its value do occur they are principally instances where delivery has been aided by instruments, and where death has followed one act of respiration.¹

§ 149. 3d. *Causes of death in the new-born child.*²—These causes are usually divided into accidental and criminal, and also into causes of death by commission and by omission. The necessity, however, of constantly keeping in mind the fact, that the imputation of a criminal purpose rests upon the explanation given to the marks by

¹ *Vide* an article in the Brit. and For. Med.-Chir. Rev., No. 66, April, 1864, p. 324, from which the views in the text have been drawn.

² See as to legal questions involved, *infra*, §§ 860 *et seq.*

which the various modes of death can be distinguished from one another, induces us to consider them from another point of view, viz., according to the *time* at which they are brought into operation. By this arrangement, the reader will be able to see at a glance that accident and design will often produce the same physical results, and will be enabled to obtain a correct view of the cause in proportion to the closeness of the apposition in which the effects are placed. For the sake of convenience the causes of death in the new-born child may be divided into those which act *before* or *during* birth and those which act *after* birth.

§ 150. (1) *Causes of death before or during birth.*

(a) *Compression of, and by, the umbilical cord.*—The umbilical cord during birth suffers compression unavoidably in breech presentations, and also when it is prolapsed in these and in presentations of the head. In the latter case, if the labor be not brought speedily to an end, or the cord replaced, the obstacle to the circulation of the blood is such, that the child will soon perish. A curious case is referred to by Dr. Elsässer, in which the hand of the child was found grasping the cord firmly and holding it against its face. The child was nearly asphyxiated, and recovered only after a quarter of an hour. There are no distinctive and certain marks proving that death is owing to compression of the cord. Great turgescence and lividity of the features, with a congested state of the head and thoracic viscera, would, in the absence of any marks of violence, afford a fair presumption of it. The converse of this accident happens, when the cord becomes the direct instrument of the child's destruction by being wound around its neck.² In this case, when death results, it is not brought about exactly in the same manner as in strangulation after birth, the child having then respired; but ensues, either from an interruption in the current in the cord itself, from the tightness with which it is wound around the neck, and the stretch put upon it in the latter stage of labor, or, probably, also, from its constriction of the

¹ The average frequency of this complication of labor is, according to Elsässer, as one to five. Its danger to the child is variously estimated. According to Mayer, it was the cause of death in only 18 out of 685 cases in which it occurred, while Scanzoni attributes 408 out of 743 cases of still-birth to this cause. Casper, who furnishes this statement alludes to a mode in which it may prove fatal besides those given in the text, viz., by causing the child to make inspiratory efforts, and thus draw the liquor amnii into its lungs, after the manner already referred to in § 148.

vessels of the neck, causing congestion, and even extravasation of blood in the brain.¹ It does not appear that this accident occurs only when the cord is of unusual length; in fact, in many cases, this circumstance is doubtless that to which the child owes its escape, because it is probably wound around the neck but loosely, and is not rendered tense by the descent of the child. As, however, fatal results occasionally happen from this cause, and as, in unassisted labors, there is greater probability of their occurrence, we cannot dispense with a consideration of the marks by which it may be distinguished from intentional strangulation before birth. The cases in which intentional strangulation may be effected before birth are those in which the head alone is born, while the body is not yet expelled. Children are not unfrequently strangled while in this position, and it is, therefore, important to know whether this violence has really been inflicted, or whether they may not have perished accidentally by constriction of the neck by the umbilical cord. A case is reported by Ritgen, in which a child, whose head was born, and who had breathed, died of apoplexy, from strangulation by the umbilical cord.²

§ 151. The statement, that marks similar to those of wilful strangulation are often produced in this manner, has, we think, been too readily accepted. Instances have indeed been met with, which support this view, but a very large and careful experience has shown, that the occurrence is far from being a necessary or a common one. Dr. Elsässer,³ in his capacity of superintendent of a large lying-in hospital in Stuttgart, instituted a series of observations which have given much greater exactitude to our previous knowledge on this subject.

In the space of seven years, there occurred in that institution 327 cases of labor in which the umbilical cord was twisted around the neck. Of this number, there was one fold of it around the neck in 228 cases, two folds in 82 cases, three in 13 and four in 4 cases. Yet, in the whole series, there was not a single instance in which the least mark, impression, or ecchymosis was visible. In some cases the cord was so tightly wound around both neck and body that it was

¹ Casper, Gericht. Med. 343 Fall.

² Gemein, deutschen Zeitschrift. Bd. I.

³ Henke's Zeitsch. 1835. Über Umschlingungen der Nabelschnur um den Hals der Kinder bie der Geburt, in forensischer, Hinsicht. Also, Henke's Zeitsch. 31 Erg. H. 1842.

necessary to divide it before birth could be accomplished. Dr. E. adds, that in a private practice of twenty-four years (1835) he had never met a case in which any mark was left by the cord. These observations establish satisfactorily the great rarity of the occurrence.

§ 152. Yet it would be impossible to maintain that no mark *ever* is left. The author quoted above admits it freely, upon the authority of Carus, Wildberg, Mende, Albert and other obstetricians. The marks are described as very various in their character; sometimes being merely furrows in the skin, without color, and sometimes red or blue stripes crossing each other and occasionally extending a short distance over the breast or back. Mr. Foster¹ reports a case in which the child was born dead, the labor being very tedious. The umbilical cord was twisted around the neck, leaving three parallel colored depressions. Dr. Döring² examined a new-born child found dead, in which the navel cord was coiled twice around the thigh, passed across the front of the body, and crossing the shoulder-blades, formed a tight loop around the neck. On the left side of the neck, beginning at the ear, there was a purple discoloration of the skin in two directions, viz.: towards the nape of the neck and towards the breast, corresponding to the parts which were pressed upon by the cord. There was no indentation nor ecchymosis, and the death of the child was found, upon examination, to be due to violence. Two cases are given in the same journal by Dr. Albert,³ in which the cord left a groove upon the neck, three or four lines wide, and of a dark blue color. The face in both cases was livid and turgid; and in one, in which the child had partially breathed, the eyes and tongue protruded, the latter being blue and swollen.

§ 153. A real ecchymosis, or extravasation of the blood under the skin, has probably been observed but seldom in accidental strangulation by the umbilical cord.⁴ A livid mark does not always indicate an effusion of blood, but is frequently caused by simple congestion—a fact which is proved by its rapid disappearance if the child survives.⁵ It would not be safe to assume that the existence of ecchymosis disproves the possibility of this accident, because, in addition to the possible occasional occurrence of extravasation, it must be

¹ Med. Gaz. xxx. vi. 485.

² Henke's Zeitsch. Erg. H. 23, p. 29.

³ Id. Bd. 42, p. 208.

⁴ Elsässer, loc. cit. 1842, p. 7.

⁵ Windel, Henke's Zeitsch. Jahrg., 1836, 1 Heft.; Heyfelder, Med. Annal. Heidelberg, 1838, S. 258; Eichorn, Med. Cor. Bl. bayer, Aertze, 1840, Aug. 8.

remembered that the marks remaining after intentional strangulation are not always accompanied by it. Even in hanged persons, an extravasation of blood under the mark of the cord is not always found. Nevertheless, if ecchymosis be found under a deep and discolored mark upon the neck, and at the same time there is abrasion of the cuticle or laceration of the skin, such an injury cannot possibly be attributed to the umbilical cord. This opinion is held by Dr. A. S. Taylor,¹ and is fully substantiated by a large number of recorded cases. In order that the reader may form an approximate estimate of the proportion of children born dead, in consequence of strangulation by the umbilical cord, we may state that Elsässer reports, that, out of 318 children born with the cord around the neck, three died, or one in 106; Carus found one in 43; and Siebold, one in 61 cases. Two points, however, must not be forgotten in connection with these data, viz., that they were all cases of labor where the best assistance was at hand, and that a certain number of the children were born apparently dead, but revived under the use of proper restoratives. The mortality in concealed and unassisted deliveries would certainly be much greater. Hence, a woman secretly delivered, may be unjustly accused of infanticide whose child has perished from a purely accidental, and by her, irremediable cause. In fact, the cord may be twisted around the child's neck or body during pregnancy, and its death is thus sometimes accomplished before the occurrence of labor.²

§ 154. The child is not unfrequently wilfully strangled before it is completely born.³ When a ligature is found upon its neck, there can of course be no longer a question whether the impressions made were due to the umbilical cord. The defence is usually that the ligature was placed upon the neck by the woman herself, with the object of assisting her delivery. No medical evidence can disprove such a statement. If, however, the child has been strangled by the hand, whether wilfully or by accident, in attempts at self-delivery, the impressions left will be of a different character from those produced by the constriction by the umbilical cord. A consideration of these will be found

¹ Med. Jur., p. 343.

² Daubert, dissertat. de funicolo umb. foetu circumvoluto. Götting. 1808. Freyer, de partu diffic. propter funic. umbil. foetus collum obstingentem. Halle, 1765.

³ See *infra*, §§ 479 *et seq.*

under the head of *Strangulation after birth*. We may, however, mention in this place, as the chief characteristic, that the indenture or discoloration made by the umbilical cord surrounds the neck entirely, which is never the case in death from hanging. The mark made by the umbilical cord is moreover broad, the depression is cylindrical, and its edges are soft, and it is not excoriated as when a string or other hard substance has been used. Moreover, this depression is rarely single, as in cases of violence, but oftener double, and occasionally triple, nor is it, as in the other case, hardened at the edges, or accompanied by subcutaneous ecchymosis.¹ It may be sometimes important to remember that, in fat children especially, if the neck be short and the body have been kept or found in a cold place, the fat, becoming congealed in the folds of the skin upon the neck, will give rise to furrows, which, to those who may disregard the other signs of strangulation, may suggest the suspicion of a ligature having been used.²

§ 155. (b) *Protracted delivery*.—The child frequently dies solely in consequence of the protraction of the labor, and this is especially the case in first labors, or where the membranes have broken early in the first stage. In such cases, death takes place usually from congestion of the brain, in consequence of the compression it suffers. After such tedious labors, the head becomes apparently elongated, and over the occiput a tumor forms, often called *caput succedaneum*, caused by a congestion of the vessels of the scalp and an exudation of bloody serum into the cellular tissue under it.

§ 156. (c) *Debility*.—The child may die, also, from constitutional feebleness, inherited from its parents, or produced by causes acting upon it during its intra-uterine existence. It may survive its birth a few hours or days, and then perish from inherent debility or the neglect of some trifling precaution, which in a healthy child would be of little importance. The inspection of the body will often warrant this judgment when there is no other evidence to show the cause of death.

¹ Casper, op. cit., i. 804.

² The degree of pressure which the cord may exert during foetal life is illustrated by those cases in which deep impressions and consequent malformations of limbs have resulted from this cause. Even the amputation of a limb has been observed as an effect. Such a case is recorded in Virchow's Archiv., x. 110, by Dr. Frickhöffer, who also cites three analogous instances.

§ 157. (d) *Hemorrhage from the umbilical cord.*¹—If the body of a new-born child present the evidence, in its blanched and waxy hue, and in the paleness and dryness of the internal organs, particularly of the heart and lungs, of a great loss of blood, the hemorrhage will have proceeded, when no wounds are found which will otherwise account for it, from the umbilical cord. This rule, which is generally admitted, is, however, not applicable when the body of the child is already decomposed; since, during the putrefactive process, according to Casper, the body parts with a considerable portion of its blood. The hemorrhage may have been accidental,² or permitted with a criminal design. In either case, it may arise from laceration of the cord, or from neglect or omission to tie it. The question of the necessity of tying the umbilical cord, although one which we, in common with the majority of writers, would unhesitatingly decide in the affirmative, is not necessary to be discussed in this place.³ As has been very justly remarked by Dr. Beck,⁴ the whole question rests upon a simple matter of fact, viz., whether the omission to tie the cord has ever been attended with fatal hemorrhage. “That it has been so, cannot be questioned.” Dr. Beck quotes cases in illustration from Fodér and from Dr. Campbell. Many other examples⁵ might be added to these, but we do not suppose that the least instructed practitioner would neglect this precaution, since, even if hemorrhage should not immediately ensue, there is no guarantee against its occurring at any time within the first two days. Yet Casper, in his long and ample experience, never met with a single instance of the sort, although not less than four cases came under his observation in which the cord

¹ See *infra*, §§ 860 *et seq.*

² From an imperfectly applied ligature, or from a morbid condition of the child's blood. See a valuable Report by Dr. J. F. Jenkins, *Trans. Am. Med. Assoc.*, xi. 263.

³ It is worthy of remark, that it is the habit of the Indian squaws to *break* the cord, and then bind the foetal end with a strip of bark. This fact we have on the best authority.

⁴ *Med. Jur.* vol. i. p. 511.

⁵ Haller, *Elem. Physiol.*, tome viii. p. 443. Nägele, *Salzb. Med. Zeit.* 1819, N. 88, S. 151. Cederschjöld, *Med. Chir. Zeit.* N. 11, S. 181—seven days after birth. Klose, *Henke's Zeitsch.* Bd. 40, S. 105. Dolscius, *ibid. Erg. H.* 34, 1845, S. 180. In this case the fragment of the cord remaining attached to the child was sixteen inches long. The cord had been torn, not cut, by the mother. The child had breathed.

was divided close to the navel, and, as he adds, examples of the cutting or laceration of the cord at various distances from the body, and without death by hemorrhage, are of every-day occurrence.¹

§ 158. The cord may have been left untied in a *first* labor, through excusable ignorance upon the part of the woman. Such ignorance, cannot, however, be plausibly urged in subsequent labors. That a woman, in an unassisted labor, who had neglected placing a ligature upon the cord, should be convicted of infanticide in consequence of the child dying from a neglect of this precaution, is of course hardly supposable.

In many cases, however, of precipitate labor, in positions other than the horizontal one, the cord frequently breaks. Hemorrhage, under these circumstances, would not be surprising. The result of observations on this point is, that in the great majority of cases it does *not* take place. In twenty-six cases given by Dr. Klein, where the cord was torn off close to the navel, no hemorrhage resulted. In Pyl's *Aufsätze* the account is given of a child which had been placed in a close box, and covered with wool, where it remained six hours, and was taken out perfectly sound and healthy, although its navel string had been torn and no ligature applied. In eleven cases reported by Elsässer, in which the child had fallen from the mother, upon the hard ground or pavement, and the cord was ruptured, no hemorrhage resulted except in two.² In these, the life of the child was saved by timely help. In two cases, in which the cord was ruptured at the navel, a very small quantity of blood escaped. In two other cases, in which the cord had been cut and no ligature applied to it, no hemorrhage resulted from the omission. One woman is reported to have followed the animal instinct, and divided the cord with her teeth.³ Others broke it in two with the hands. In one case the mother (who had previously borne children) was suddenly delivered in the street, in a squatting position. The child, which weighed seven pounds, fell upon

¹ Gericht. Med., i. 824.

² Henke, Zeitsch. Erg. H. 31, p. 38.

³ This is not the practice with all the domestic animals, as is erroneously supposed, but only with the dog, cat and pig, which, moreover, devour the after-birth. But in the horse and in the ruminant animals, the cord is generally broken by the fall of the young when the mother is in a standing position, or, when delivered in the recumbent posture, by her suddenly springing up. The rupture occurs in general near to the navel. When it is not broken in either of these ways, assistance is usually at hand to make the separation.

the pavement. The mother immediately broke the cord in two, about four inches from the navel, and, without tying it, put the child in her apron and ran with it to the hospital. There she was delivered of the placenta, with considerable hemorrhage, from which she soon, however, recovered. The child showed no signs of loss of blood. The general opinion, undoubtedly, is correct, that a ruptured or lacerated cord will be much less apt to bleed than one which has been divided by a clean incision.

§ 160. (e) *The length of the umbilical cord* is an important element in the consideration of those cases in which it has been broken, from delivery having taken place in a standing position. An example may be cited from Siebold's Journal, vol. xvi., p. 3, where a woman was overtaken by labor and the child born while she was in a standing posture. It fell with its head upon the stone floor and sustained no injury. The cord did not give way: it was twenty-nine inches long. A similar case by Heyfelder is referred to by Elsässer.¹

The usual length of the cord is from eighteen to twenty inches,² and the average distance of the vulva from the ground, in a woman standing, is, according to fifty accurate measurements made in Dr. E.'s hospital, twenty-six inches, and in a woman in the squatting posture, one-half or two-thirds of this distance. The distance from the child's navel to the top of its head is from nine to ten inches. Hence, if we add this to the whole length of the umbilical cord, in consequence of the head being the heaviest part of the body, it will be seen that the child can fall from twenty-eight to thirty inches without putting a strain upon the cord. But this distance will necessarily be diminished by the unavoidable separation of the limbs during the descent of the child, it being clearly impossible that a woman can be delivered in a *perfectly* erect position. The cord may, however, be unusually short or wound round the neck, in which case, of course, its rupture will readily take place. The point at which the cord breaks is, in the great majority of cases,

¹ Loc. cit.

² Dr. Tyler Smith exhibited to the Westminster Medical Society (Jan. 12, 1850), a funis which, measuring from the attachment at the umbilicus to its insertion into the placenta, was *fifty-nine* inches and a half in length. In the Boston Med. and Surg. Journal for July, 1850, one is mentioned which measured *sixty-nine* inches.

near the navel, the distance varying from one to six inches; occasionally, however, it occurs at other points. This circumstance admits of explanation upon the ground that the greatest resistance is at the foetal end of the cord, the placental portion being more yielding. When the cord does not break, the placenta is sometimes dragged out by the weight of the child. A curious and important case, in which the cord was ruptured while the woman was in a *recumbent* posture, is given by Elsässer.¹ The cord was unusually short, and the child forcibly expelled, immediately after the rupture of the membranes. When taken up it cried loudly, and was found to be bleeding freely from the umbilical cord, which was ruptured about three inches from the navel. The cord was from thirteen to fourteen inches long, and not thicker than the little finger, although healthy. The woman had previously given birth to six children.

§ 161. (f) *Fractures.*²—Where fractures are found on the head of a new-born child, they may be attributed as well to accidental as to criminal causes. If a woman have received in the latter portion of her pregnancy, a violent blow or fall upon the abdomen, the child's head may be fractured by the same force. J. P. Frank relates the case of a woman, six months pregnant, who received, on the abdomen, a blow from the butt of a musket, in consequence of which she was prematurely delivered.³ The child's skull was crushed and the navel-cord broken. Another case⁴ may be referred to, where a woman near her confinement fell upon an angular stone. The skull of the child was completely crushed, and the woman herself died. Other intra-uterine fractures, it may here be stated, are occasionally met with, besides those of the head. Dr. Keller has given an account of a fracture of the clavicle, which was caused by the fall of the mother from a carriage during the fourth month of pregnancy. At birth, which took place at term, the evident marks of a consolidated fracture, with some deformity were apparent.⁵ Two other cases of intra-uterine fracture of this bone are related by Mr.

¹ Henke, *Zeitsch. Erg. H.* 31, p. 39.

² See *infra*, §§ 860 *et seq.*

³ For another similar case by Callenfels, *vide* Fröbel, *Die Nabelschnur in ihrem pathol. Verhalten während der Geburt.*

⁴ *Gaz. des Hôp.*, Nov. 7, 1846.

⁵ *N. Amer. Med.-Chir. Rev.*, July, 1859, p. 687.

John Ewens.¹ Basmer relates a case² in which the right arm and forearm and both thighs and legs of the foetus, which died immediately after birth, were broken. The earthy matter in the bones formed one-third only of their weight instead of one-half as it should have done. Three cases are quoted by Dr. Gurlt,³ from d'Outrepont, Löwenhardt, and Ozajewski, in one of which the skull of the foetus was fractured by a shot, in a second by a scythe, and in the third the shoulder-blade was broken by a sickle. In all three cases the children were born dead; in the first two, immediately after the injury, and in the third at the end of two days. In the first case only did the mother die. In all of these cases the mother was of course wounded. The same author cites eight cases in which falls or blows experienced by the mother produced fractures of the bones of the foetus. The accident usually occurred in the latter half of pregnancy, and generally the lower limbs were the parts injured. Union of bones so broken is stated to be slower than in extra-uterine life; but on this point the evidence is not very clear. Such cases, however, have little practical bearing upon the subject; the child is born dead in consequence of the injury, and, if not putrid, an inspection of the lungs will at once show that it has not respired. Hence there can be no question of infanticide.

§ 162. Again, however, fracture of the skull may occur *during labor*, in consequence of the relative disproportion of the head to the pelvis, or of a deformity in the latter, arising from osseous projections or tumors. The child may survive these injuries a sufficient time to breathe,⁴ and, indeed, may recover from them altogether. It becomes necessary, therefore, to take the circumstance into consideration, in all cases of fracture of the skull in new-born children, that it may have occurred *accidentally during labor*.⁵ Fractures produced in this

¹ Med. Times and Gaz., May, 1860, p. 482; consult also ibid., April, 1860, p. 353.

² Brit. Med. Journ., 1857.

³ Lehre von den Knochenbrüchen, Frankfurt a. Main, 1860, p. 211.

⁴ Klein. (Bemerkungen über die bisher angenommenen Folgen, etc., 1817, § 193.) The child lived forty-six hours. The parietal bones were fractured, and there was extravasation of blood in the brain and spinal canal.

⁵ For cases *vide* Deventer, Röderer, Baudelocque. E. v. Siebold (his Journal, xi. 3), Schwörer (Beiträge zur Lehre von der Schädelssbrüche, etc.). Begasse (Preuss. Med. Vereinschrift, 1841, No. 37, sec. 181.) Mende (Gutachten über

way are certainly of very rare occurrence, for the child's head often sustains extreme compression, both from the uterus and in forceps deliveries, without being injured. They are found most frequently in the parietal bones, sometimes in the frontal, and never, as far as we know, in the occipital bone. Usually they are mere fissures, unattended with depression and laceration of the integuments. Cases, however, are related by Landsberg,¹ and by Danyau, and Ollivier d'Angers,² in which there was depression. M. Lizé mentions the case of a young woman who was three days in labor, and who was delivered without instruments after great efforts on her part. The child was dead, and the parietal bone of the left side severely fractured.³

§ 163. Although respiration may have taken place, the fact being established by the hydrostatic test or direct evidence, it will not serve as a criterion of the time at which the fracture was produced, since the child may have received it during the labor, and yet have survived the injury until after it was born and had breathed. In such a case we have nothing left to guide our judgment, but an examination of the extent, situation and appearance of the fracture. In the majority of cases, in which criminal violence has been used, the fracture is stellated, depressed, and the scalp contused and lacerated. It is plain, however, that slight fractures, productive of fatal results, may be inflicted by violence, and in such cases no reliable distinction can be made between them and those which are caused by compression of the head during labor. The following will serve as an example of fracture without injury to the integuments, but still in all probability caused by criminal violence. An inquest was held in Islington, before Mr. Wakley, on the body of an infant, whose death, there was reason to believe, had been caused through violence wilfully inflicted by the mother. Over each orbital ridge the frontal bone was fractured horizontally, to the length of about an inch. On the right frontal protuberance, the bone had been driven in to the extent of three-quarters of an inch, in the form of an acute wedge-like fracture. The parietal bones were both fractured vertically, to the length of an inch and a quarter, and there were several minor fractures of

einen Zweifelhaften Fall, etc., H. Z. Bd. 3, sec. 277). Casper (Wochenschrift, 1837, 1840, 1851). Osiander, loc. cit.

¹ Henke, Zeitsch. 1847.

² Ann. d'Hygiène, 32, 121.

* Lancet, Feb. 1860, p. 180.

all the bones forming the superior and lateral portions of the skull. There was, with all these fractures, no trace of injury to the scalp. No evidence was obtained as to the manner in which they were produced. The child had been born alive, and the mother alleged that its death was caused by its having fallen into the pan of the water-closet, where she asserted she was seated at the moment of its birth. The extent of the injuries, and the small distance of the alleged fall, disproved the truth of this statement.¹

The physician should be aware that a *defective ossification* of the bones of the head may be mistaken for a fracture. The distinction is, however, not a difficult one. This condition, when observed is usually found in the parietal bones, and consists in an absence of one or more of the osseous *spiculae*, which radiate from the central point of ossification. The gap is filled up by a membrane which unites the bony portions together. The edges of the bone on each side of this membrane are thin and bevelled, sometimes shading off insensibly into it. A fissure, however, which is the result of violence, is indicated, on removing the pericranium, by a red line, the edges of the bone are jagged and bloody, and no membrane intervenes. More or less blood is effused in the neighbourhood of the fracture, under the scalp and on the dura mater. If no bone is lost, the edges of the fracture can be adjusted closely together.²

§ 164. Fractures which are occasioned by the *fall of the child* upon the ground, when the mother is delivered in a standing, sitting or kneeling posture, are deserving of particular attention in a medico-legal point of view. The fractures thus produced present, indeed, no peculiar features by which they may be distinguished from others, caused by direct violence, but the probability of their being due to this accident becomes often a question of extreme delicacy. Landsberg gives a good illustration of this accident in the following case:³ A woman, who had already borne

¹ Brit. and For. Med. Rev., April, 1854.

² The period at which the fontanelles close has been made a subject of inquiry by M. Roger (Union Med., Nov. 1859). They generally close between the second and third year. In three hundred children, the anterior fontanelle was never found closed before the fifteenth month, and never open after the age of three years.

³ Henke, Zeitsch. 1847, 3 Heft.

children, was taken in labor, as she ran from her house which was on fire, the child fell from her upon a heap of broken bricks and stones. Fourteen days afterwards there was found, upon the left parietal bone of the child, a swelling of the size of a pigeon's egg, without any discoloration of the skin, and with slight fluctuation. The fragments of bone and crepitation could be easily distinguished by pressure of the finger on this spot. The child got well.¹ Numerous other cases might be quoted; the curious reader will find many referred to by Henke.² Dr. Klein collected one hundred and eighty cases of delivery in the erect posture, in none of which the head of the child was fractured. It is contrary to reason, however, to adduce this as proof (as has been done by some authors) that fractures are not occasioned by the accident in question. The instances which demonstrate its occurrence are perfectly authentic, and if we were reasoning abstractly, it would be far more credible that the fractures should occur under the circumstances referred to, than that they should not.³ The possibility of the accident may therefore always be

¹ Dr. Swayne reports a case in which a woman, twenty-nine years of age, in her third labor, at full time bore a child in the erect posture. The umbilical cord was torn, and the child, though much bruised, lived to the sixth day, when it died of convulsions. The parietal bone was fractured, and a coagulum was found on the membranes of the brain. Another case is reported by Casper (Ger. *Leichenöff*). (*Assoc. Journ.*, Oct. 14, 1852, p. 401.)

² *Handbuch der Gericht. Med.*, 12th ed., by Bargmann, 1851.

³ Casper speaks in deservedly severe terms of some writers who, on merely theoretical grounds, deny the reality of this accident. He also mentions the following instances of delivery under circumstances fitted to occasion it. In one, a serving woman carrying a heavy burden on her head, was seized with labor in the street, and the child was seen to fall from her upon the frozen ground. In the second case, both child and afterbirth were discharged simultaneously in the presence of witnesses. In a third the mother was getting into a high bed, having one foot upon it and one upon the steps leading to it, when the child fell from her. In a fourth, a female prisoner gave birth to a child, which fell upon the floor, while she was dressing and in the erect posture. In a fifth, a married lady in her third pregnancy was thus unexpectedly delivered. Finally a woman expelled her child while seated in a privy, and the infant fell upon the firmly frozen substances beneath. With such examples before us, concludes Casper, we may safely lay it down as a general law, that sudden delivery while the mother is in an erect posture is altogether possible, and that the child is susceptible of being wounded in the head, and even mortally. (*Gericht. Med.* i. 811.) For other illustrations, see §§ 175, 176, also *Lond. Times and Gaz.*, Jan. 1860, p. 98.

taken into consideration, in cases of concealed birth, when fractures of the cranium are discovered. Other evidence will be of course required to confirm the supposition.

§ 165. (2) *Causes of death after birth.*¹—The modes in which a new-born child may meet its death shortly after birth are very numerous. A child may be born with such a degree of *malformation or disease* as to incapacitate it from sustaining life. In all such cases an examination by a competent person will be sufficient to expose the reason of death. It must be remembered, however, that there is hardly any malformation which *necessarily* prevents the child from existing for a brief period, even though it should at last be fatal as a natural consequence. Anencephalous children frequently survive for hours and days, and perform most of the animal functions perfectly well. If violence should be inflicted upon such an unfortunate being, it may be judged according to the ordinary rules; the aim of the physician being only to ascertain what share the injury had in its death. The question of the degree of criminality attached to the destruction of a monstrous child is not, of course, within his province. Minor degrees of malformation are not infrequent, such as extroversion of the bladder, displacement of the viscera, spina bifida, occlusion of the intestine, imperforate rectum, abnormal communications between the cavities of the heart, etc.; many of them are remediable, others are not inconsistent with the attainment of adult life, and none can interfere with the judgment of a medical examiner in any case of infanticide. The same remark will apply to *congenital diseases*. Their actual existence can be ascertained, and allowance made for any influence they may possibly have exerted in causing the child's death.

§ 166. (a) *Exposure.*—Under this name may be included all those modes of death which result from the abandonment of the child.² The new-born child, unlike the young of many other animals, speedily perishes if uncared for. It requires both warmth and nourishment, and, if deprived of either, cannot maintain its existence. The period of time for which a child may survive, exposed to hunger and cold, is uncertain. Instances are on record, which show a remarkable tenacity of life. A case is related³ in which a child, in the middle of the

¹ As to legal relations of infanticide, see *infra*, §§ 860 *et seq.*

² See *infra*, §§ 860 *et seq.*

³ Henke's *Zeitsch. Erg. Heft.* 31.

night, was thrown out of a window nine feet from the ground. It was still attached to the placenta. It fell upon a pavement which was covered with straw and dung. It remained there, naked and exposed to the night air (in the month of April), for three-quarters of an hour. It was then found, and lived twenty-four hours afterwards. It had received no injury from the fall.

A peasant woman delivered herself of a mature child, in the vicinity of a wood, on the 18th of August, 1842, and, fearing discovery, she concealed it in the hollow of a tree, thrusting it, head forwards, into the portion of the cavity which led towards the root, so as to exert considerable compression on the body, doubling it up, as it were. She then laid two stones of three or four pounds' weight upon its buttocks, and concealed the hole in the tree with a large stone. By a lucky accident, a passer-by, on the 21st, heard its moaning, and withdrew it from its prison, covered all over with fir spiculae and ants. There were numerous contusions and lacerations upon different parts of the body. Its respiration, at first very rapid, soon became more tranquil, and, although much emaciated, it cried with some vigor, and very readily partook of food. Its temperature was normal. Any change of position called forth screams, due evidently to the pain of the various excoriations of the surface. It continued until the 25th to take nourishment, but the sores on the surface put on an ill character, and it died on the 29th. It seems almost incredible that life should have been prolonged during the exposure of this naked infant, without food, for three days and nights, the temperature of the air varying from 50° to 80° Fahr. Probably its close quarters within the tree protected it in some measure from cold; but the privation of food ought, according to the generally received opinions, to have proved fatal before the period of its discovery. Foderé states that danger to life is imminent after twenty-four hours; and, at most, that the infant can fast from one to two days only.

§ 167. Cases of such long survivance are, of course, exceedingly rare. The judgment of the physician must therefore be founded not only upon an examination of the body, but also from concurrent evidence. He must be aware of the length of time the child had been exposed, and the temperature of the locality in which it was

¹ Brit. and For. Med.-Chir. Rev., Jan. 1850, from Henke's Zeitschrift, 1847,
3 H.

found, before he can rely with confidence upon the signs of death from cold. These signs are far from being positive, unless the child has been actually frozen. In this case the skin will be found of a purplish color, the hands and feet swollen, the nails blue, and the face of a bright-red color. The brain is greatly congested, and the lungs and right cavities of the heart contain more blood than usual. When the body is brought into a warm place, it putrefies rapidly. The same remarks will apply in cases where death is supposed to have resulted from starvation. It is necessary to know approximately how long the child has been deprived of nutriment, before the absence of food from the stomach, and the general signs of death from this cause, can warrant the opinion that the child has perished for want of food. The signs usually given are, a shrivelled and wasted body, a pale and wrinkled countenance, expressive of suffering, and a dry, tough, and yellowish skin. The mouth, tongue, and fauces are dry, the stomach and intestines empty—the surface of the former inflamed in points, the latter distended with air—the heart flaccid, and the great vessels containing but little blood.¹ It is evident that a child may be given unsuitable food, or in insufficient quantities, with a view of destroying its life. Such a fact can hardly come under the cognisance of the physician in a criminal case, except in reference to the general effects of such treatment.

§ 168. (b) *Suffocation.*²—This word is used here to signify any means by which access of air to the lungs is cut off. It includes, therefore, death by smothering, heavy pressure on the chest, strangling, and drowning, as well as the purely accidental modes of death immediately after delivery. The general signs of suffocation are the same in these various cases; but if wounds have been inflicted upon the child, causing hemorrhage, or if it has lost blood from the navel cord, the signs alluded to will mostly disappear. They consist in congestion of the brain, but particularly of the lungs and right side of the heart, which are filled with dark blood.

Besides these appearances, which are common to asphyxia in the adult and in the child, there are in the latter, often observed, numberless sanguineous extravasations very much like petechiæ, in the pia mater, upon the pleura, surface of the heart, and the aorta. These

¹ Bock, p. 257.

² See *infra*, §§ 465 *et seq.*

have been carefully described by Casper and by Mr. Canton, of London, as occurring in children which have been overlain, or which have been intentionally suffocated. All the cases upon which the observations were founded were subjects of judicial inquiry.

The *accidental* causes of suffocation are present after delivery. Frequently the woman, being either unconscious or unable to help herself, neglects to remove the child from the pool often made by the discharges in the bed. Lying in this, with its mouth downward, the child will perish from want of attention. Again, the membranes may interpose between its mouth and the air, or its mouth be so filled with viscid mucus, that, unless some little help is given it, it may easily be suffocated. Children are often designedly or accidentally smothered under the bedclothes, in boxes, etc.

The following is a curious example of accidental suffocation of an infant. Mr. Llewellyn, surgeon, found the child dead; the tongue protruded, the face was very livid, and it had all the appearance of having been suffocated. He questioned the mother, and she told him she had dreamt that a mad bull was attacking her, and had squeezed up the child to protect it, and, when she awoke, as she found the child cold, she called her husband. The child had been properly taken care of. The parents had three other children, were very industrious people, and kind to their children. The child was lying on her arm, and its death might very probably have occurred as she described it.¹

If much pressure have been made upon them, the body and head will be found flattened, the eyes and lips remain half open, blood flows from the nose, the tongue protrudes, frothy mucus is present at the corners of the mouth, and the excrements have been voided. The limbs are generally extended, the skin is not uniform in color, and presents here and there violet ecchymoses, the lips look blackish, and the nails livid.

§ 169. Sometimes the child is suffocated by stopping its mouth with foreign substances. Hence the necessity in every case presenting signs of suffocation, of closely examining the mouth and fauces, although, indeed, instances are not wanting where all traces have been carefully removed previously. A very interesting case is reported, in which the child was immersed living in a pot of ashes.

¹ Brit. and For. Med.-Chir. Rev., Jan. 1855, p. 292.

The woman's confession confirmed the result of the medical examination, which showed that the child had been gradually asphyxiated. The ashes were found in the nostrils, mouth, fauces and pharynx. There were none in the windpipe.¹ A case is reported by Dr. Littlejohn, in which the child was suffocated by dough forced into its pharynx and larynx; and another is quoted by the same writer, in which a plug of newspaper had been used to produce suffocation.² Another case,³ instructive in this connection, is also of interest from the uncertainty whether or not the child was living when the outrage was inflicted upon it. A child was found, in which the fauces, the upper portion of the œsophagus, the larynx and the trachea, were tightly packed with a coarse greenish-black sand. At the same time the child's lungs evinced no sign of respiration, and sank to the bottom of the water when subjected to the hydrostatic test. While it is difficult to imagine for what purpose, if the child were already dead, the substance found so tightly wedged into the entrance of the respiratory passages and throat could have been forced there, it is no less strange that such an act of violence could have been perpetrated upon a living child, without its lungs showing signs of, at least, imperfect respiration. The case unfortunately remains without solution; but, in whichever light it may be viewed—whether as an unaccountable act of violence after death, or an unique case of successful prevention of *respiration*—it cannot fail of being of great interest to the medical jurist. A child may also be destroyed by being exposed to noxious vapors, as those of burning charcoal or sulphur, the exhalations of privies, etc., and no trace will remain of the cause of its death, except, in some cases, the odor of the deleterious gas or vapor which destroyed its life. Cases bearing upon this point will be found in § 130.

§ 170. (c) *Strangling.*⁴—The marks of strangulation differ according to the means by which the violence is effected. As a general rule, more violence being used than is necessary to accomplish the purpose, distinct marks of a cord or of the fingers, with abrasion of skin, will be met with. These marks will be irregular in shape and size, being either spots, furrows, or indentations, red or livid in color,

¹ Ann. d'Hygiène, 47, p. 460, 1852.

² Edinb. Med. Journal, i. 521.

³ Casper's Vierteljahrsschrift, 1852, H. 2.

⁴ See *infra*, §§ 479, 860 *et seq.*

with sometimes subcutaneous extravasation. In the absence of these signs, we may be at loss to explain the manner in which suffocation was accomplished. But, even if the marks spoken of exist, it may be alleged that they were produced accidentally by the umbilical cord as we have before explained (§ 158), or, as some authors affirm, by the efforts of the woman to assist herself in her delivery. Such an idle assumption will frustrate the best medical evidence, if received, since the physician can only determine whether the marks are those of strangulation or not; he can seldom decide with certainty how they were made, and much less whether before or after complete birth and respiration. It is sometimes necessary to know whether the marks of strangulation could not have been produced *after death*. This, upon good authority,¹ may be answered in the affirmative, if the body be still warm when the constricting force is applied. The question as to whether the umbilical cord had been severed before the strangling was attempted, is of no importance in a medical point of view, since this circumstance will not in any manner affect the signs of the mode of death, and respiration may have been perfectly well established long before the cord is cut.

A case is related in the *Lancet*,² where a child, with the placenta attached to it, was buried in the ground, and covered one inch and a half deep with earth. It was found that at least half an hour had elapsed since the earth had covered the child, and yet, when it was taken up, respiration was still going on.

§ 171. Maschka relates a case³ where a child was found in a privy. The heart and lungs floated, apparently from decomposition, for after pricking the bullæ and compressing the lungs they sank, yet faeces and sand pervaded the smaller bronchial tubules. The decision given by Maschka was that the child had been dropped into the privy alive, and had there attempted to breathe. The mother stated that it was expelled from her while she was at stool.

§ 172. (d) *Drowning*.—The signs of death by drowning, in the new-born child, do not differ from those found in the adult, and are elsewhere fully considered. Generally, however, children which are found dead in the water have been thrown into it, for the purpose of

¹ Casper's *Wochenschrift*, 1837; Ollivier (d'Angers) *Ann. d'Hyg.*, vol. xxix. p. 149.

² Am. edit., 1850, p. 513.

³ Viertel. f. Ger. Med., 1865, N. F. Band II. p. 87.

concealing the body, after they have already perished by natural or criminal means. Hence it is not often that the peculiar signs of death by drowning will be met with, but, in all cases where children are found dead in the water, search should be made for traces of other violent injury, and it should be especially noted whether respiration has occurred. If marks of violence are found upon the body, particularly fractures, they must be carefully examined for the purpose of ascertaining, if possible, whether they could have been accidentally produced by substances in the water, or whether they were not rather due to criminal violence, and inflicted during life. Such a question will very naturally arise, when, for instance, a large stone is found in the bag in which the child has been thrown into the water. A case of this kind has been reported in Henke's *Zeitschrift*. The general rules elsewhere detailed, by which a distinction may be made between wounds inflicted before or after death, are applicable here. These signs will not be affected by the submersion unless putrefaction has taken place.

§ 173. (e) *Wounds*.—The general distinctions between wounds inflicted before and after death are considered in the chapter on WOUNDS, Book V., part II. The remarks there made are equally applicable in the case of new-born children.¹ Wounds inflicted upon them being very rapidly fatal, the signs which show that they were made during life, drawn from the ensuing inflammation, rarely come under notice. The character of the blood effused is, however, a diagnostic sign of great value. If this is found coagulated, there can

¹ As to wounds in general, see *infra*, §§ 265 *et seq.* As to legal relations of wounds, see *infra*, §§ 776 *et seq.* Wounds found upon a child may have been inflicted in utero, just as the fractures are which have already been referred to. Mr. Lynch (Brit. Med. Journ. and Abeille Méd., xv. 95) reports the case of a child born dead at the eighth month with a contused wound of the back, looking as if the skin and muscles had been violently torn from the occiput to the sacrum, and also as if the part had begun to heal. A week before the mother had met with a fall upon a piece of wood. In another case reported by Dr. Finnell, there existed a penetrating wound of the leg which he attributed to a stab in the abdomen below the umbilicus, received by the mother a week before her confinement, which was brought on by her injury. Immediately after the infliction of the wound, a gush of water followed by blood had taken place from the uterus. (New York Journ. of Med., Jan. 1860, p. 99.) A very remarkable case of foetal wound is published in Med.-Chir. Trans. xxxii. 59, and several others of extreme interest are referred to by Dr. Montgomery, *Signs and Symptoms of Pregnancy*, 2 ed., p. 684.

be little doubt that the child was living when it received the injury; but if, on the contrary, blood be found extravasated under the wound, or effused around it, and still remaining liquid, we may be equally sure that the wound was made shortly after death, and while the body was still warm. A recent observation by Ollivier d'Angers will illustrate this fact. In this case the child was murdered before it had breathed, but while the circulation was still going on, as was proved by the examination of numerous wounds made by a cutting instrument in the back of the throat, as well as of other injuries. Coagula were found upon the orifices of the wounds. An incised wound may be accidentally inflicted upon a child by the knife or scissors, in severing the umbilical cord. When this happens, it will generally be found that the fingers or toes, or some part of the limbs, which have been suddenly elevated by the child at the moment of the incision, are injured. Where there is any suspicion of the wound having been produced in this way, the physician must carefully examine the situation, extent, and shape of it, and assure himself that the cord has really been cut, before assenting to the probability of this explanation. A peculiar mode by which the new-born child is often destroyed, is the introduction of pointed instruments, such as pins or knitting-needles, into the fontanelles, the ears, the nose, and between the vertebræ. In a superficial examination, these injuries may be overlooked. Hence, in doubtful cases, attention should be carefully given to this point. By dissecting out the suspected portion of skin, and stretching it against the light, the finest puncture can be detected. Sometimes a multiplicity of wounds is inflicted. The following cases will serve as examples. A young woman, becoming pregnant, concealed her situation with great care. Her parents could not prevail upon her to acknowledge it, but it was finally ascertained by a mid-wife. She was confined alone. She seized a pocket-knife, thrust the blade into the child's head, back, abdomen, and limbs, cut off its head, and concealed the bleeding fragments under her paillasse. She was soon discovered, and at first denied the crime. Afterwards she brought the knife to the mayor, and made no attempt to escape, but confessed the act, and ascribed it to despair at having been abandoned by her lover.¹

A still more inhuman example of infanticide is reported by Prof.

¹ Ann. d'Hyg., 1851.

Toulmouche.¹ It was proved that Severine L—— had borne an illegitimate child, of which no traces could be found. The girl, who at first obstinately denied the charge, finally confessed the crime, and indicated to the medical officers the place where she had concealed its remains. She said that she had been delivered at night, had suffocated her child, then cut it into pieces, the better to conceal it in the chamber vessel, which she then carried into the garden, and threw the contents into a dung-heap. With some difficulty the fragments were nearly all recovered, and placed in apposition. The head, thorax and abdomen had been all separated from each other by a cutting instrument. The head was dreadfully mangled, the arms were cut off from the chest, and the forearms from them again, and many of the fingers also were separated. In like manner, the lower extremities were dissevered. The genital organs were separated completely. The lungs were of a rosy color, crepitant, and weighed two and a half ounces, with the heart and thymus attached. Being put into water, they floated, even after being subjected to enormous pressure. A portion, after being placed under a weight of 60 kilogrammes (132 lbs.), still swam. The heart and the bloodvessels were entirely empty of blood, and the substance of the former was very pale. From these, and the signs which indicated the maturity of the child, it was justly concluded that it was at term, had lived and breathed, and that its death was caused by the wounds inflicted upon it by a cutting instrument. Siebold² also witnessed a case somewhat like the foregoing, in which the mother, actuated by the usual motive, viz., fear of abandonment, destroyed her new-born child by cutting off its head. In this case, also, the hydrostatic test clearly proved that the child had fully breathed.

§ 174. (*f*) *Dislocation*.—There have been examples of infanticide by dislocation of the neck. The discovery of the luxation requires no unusual skill in post-mortem examinations.³ As the existence of other dislocations in children found dead may give rise to a suspicion of criminal violence, it should be shown that intra-uterine dislocations are occasionally met with. Dr. J. B. S. Jackson has described a complete upward dislocation of the head of the thigh-bone, and a

¹ Ann. d'Hyg., July, 1853.

² Henke's Zeitsch., 1845, p. 157.

³ For a case in point see Orfila, Med. Leg., vol. ii., p. 109.

partial dislocation of the knee-joint, in an acephalous foetus weighing two pounds and two ounces.¹

§ 175. (g) *Unconscious delivery.*—It is frequently alleged, in defence of women charged with infanticide, that the rapidity of their labor, and the sensations attending it, were such, that they were not sufficiently conscious, at the moment of the expulsion of the child, to save it from danger. This defence is often made in those cases where the dead body of the child is found in a privy-well, or water-closet. Although, in many cases, the proof of delivery having taken place in the manner described, depends upon other evidence than that required of the physician, yet there are questions which he will be called upon to answer, relative to the probability of the occurrence, which will demand very careful reflection. At first sight, the fact may appear highly improbable, that a woman should possibly mistake the convulsive pains of labor for the ordinary sensation of a call to stool, or that any labor, however easy or rapid, could be accomplished without her being fully conscious of it. With due allowance for cases of wilful deception and of purposed wrong to the child, there remains sufficient evidence to show the possibility of unconscious delivery in this sense. As the child's head descends into the pelvis, the mother is often seized with an irrepressible desire to evacuate the bowels, and nothing is more common than for this evacuation to take place, in spite of all efforts to restrain it, at the very moment that the child is expelled. Hence, it is quite intelligible, that a woman in labor, in the absence of proper advice, may seat herself upon the privy hole or night stool, at precisely the most critical moment for the child. By a forcible pain, favored by a very yielding condition of the parts, the head may be abruptly expelled; the cord may break with the fall of the child, which may perish miserably, either by the injury received in its fall, or stifled with the filth into which it is plunged. The mother, exhausted and terrified, may be unable to prevent this catastrophe. Cases of this kind are related, of married women and of others, where there was no attempt to conceal the birth, and no suspicion of criminal intentions.² An English lady in India was pregnant at full

¹ Boston Med. and Surg. Journ., March, 1860, p. 127.

² For cases illustrative of this fact, *vide* Henke's Abhandlungen, Bd. i. S. 40 ff. 2te Aufl.; Dr. Schnitzer (Med. Zeitung d. ver. f. Heilk. in Preussen, 1839); Fleischman (Henke's Zeitsch. 1839, 2 H.); Dr. Beck (Ed. Med. Jur., p. 317, note); Ricker (Henke's Zeitsch. 1843, 3 H. p. 197). Also note to § 164.

term with her second child. She experienced a very slight sensation as if her bowels were about to be relieved ; a feeling as if something had touched her body followed, and caused her to ask the attendant to lift the bedclothes, when, to the surprise and alarm of both, the child was found entirely extruded. It was but slightly undersized.¹ An equally striking case, in which the escape of the child from the maternal parts was mistaken for an evacuation of the bowels, is reported by Ammeuille.² While a want of knowledge of the phenomena of labor may plausibly account for the event in a woman with her first child, yet the greater rigidity of the parts, and the slower progress of the delivery in this case, render its occurrence far more unlikely than in those who have already borne children. It is said, that, if the cord be found broken, instead of cut, it will confirm the story ; but this circumstance is not conclusive, since it may have been broken by the hands of the mother, and the child afterwards thrown into the privy for concealment. In most cases, our opinion can be founded only upon the traces of blood at and near the alleged scene of labor, and upon the absence of conflicting testimony. The concealment of the fact of having given birth to a child will throw just doubt upon the woman's veracity, since, if the delivery were accidental, the natural presumption is, that the mother would have sought for immediate assistance.

Other forms of unconscious delivery do not possess the same practical interest as the foregoing. Women may be delivered in a state of insensibility, and, according to Dr. Montgomery, even during deep natural sleep ; in such cases, the child may perish from want of attention, and in some one of the various ways before alluded to.³

Delivery may also be so *rapid*, although the mother is aware of being in labor, that she is unable to guard against an accident to the child. Mrs. B., of Quebec, aged thirty, married, and pregnant with her first child, was seized during the night with labor-pains. After bearing them for a long while, she requested a woman to give her some water to "set over," to relieve what she described as a great pressure at the lower part of her bowels. She had hardly seated herself upon the edge of a rather high chair, when a severe-bearing down

¹ Dr. G. Smith, Brit. and For. Med.-Chir. Rev., Oct. 1857, p. 554.

² L'Union Méd. ; and Phila. Med. and Surg. Reporter, March, 1860, p. 501.

³ See Rawson, Lancet, 1841 ; Schultze Ann. d'Hyg., v. 33, p. 216.

pain seized her, and before any assistance could be afforded (although one or two women were in the room), the child was forcibly expelled, and fell, head foremost, on the floor, being killed on the spot. When the physician arrived, about twenty minutes after delivery, the child, although dead, was still attached by the cord to the placenta, which came away shortly after the infant. In another instance, the wife of a clergyman, in labor with her *second child*, but not suffering from any pain, was suddenly seized with a strong bearing-down pain, and got up with the intention of walking into an adjoining room. Before she had proceeded more than a few yards, another pain threw the infant upon the carpet. The cord was ruptured near the umbilicus, but fortunately *did not bleed* from the foetal portion. The child was not injured. A similar case is remarked by Dr. Larkin, of Wrentham, Mass., except that the cord was so long, that it was not broken. The mother broke it in two, and succeeded in reaching her bed-room, although much exhausted from hemorrhage. Both mother and child recovered.¹

§ 176. (h) *Poisoning.*²—This form of infanticide is extremely rare. Dr. Taylor states, that the earliest stage at which he has known a trial to take place for the murder of a child by poison, was *two months*. In this case, a quantity of arsenic was given to the child, and it died in three hours and a quarter after its administration.³

More recently, a woman destroyed her child, which was only *one day old*, by arsenic. She was tried, and acquitted upon the plea of *puerperal insanity*, although the evidence certainly did not warrant such a verdict. Mr. Justice Cresswell, at the close of his charge to the jury, read the whole of the evidence, and at the close remarked that he was bound to tell them that there was undoubtedly no direct proof that the prisoner was otherwise than in her perfect senses, as no person saw her laboring under delusion or insanity.⁴

The defence in this case should suggest to the medical expert the reflection that, however palpable the fact of criminal agency may, in a case of infanticide, appear to him, and however complete may be the proof of the child having both lived and breathed, he can never be exempt from the mortification of hearing objections urged, entirely

¹ Am. Journ. Med. Sci., Jan. 1846, quoted from various sources.

² As to poisoning in general, see *supra*, vol. ii. As to legal relations of poisoning, see *infra*, §§ 776 *et seq.*

³ R. v. South, Norf. Aut. Circ., 1834.

⁴ Ed. Monthly Journ., Sept. 1852.

foreign to the case, and a defence set up which has merely an imaginary basis.

Luschka¹ draws attention to the fact that on the lips of new-born children there is an outer smooth zone and an inner villous one with a marked furrow between, looking, when the mouth is gently closed, like a double lip. The villous zone disappears with advancing age; but, should death occur before it has done so, it dries even down to the submucous tissue, and looks much like an eschar, which, unless understood, might readily be taken for the effect of a corrosive poison.

§ 177. Some valuable experiments and conclusions by Casper, contained in his *Vierteljahrschrift*, 1863, Heft I. p. 1, are here added as being perhaps the most appropriate place. From the fact that one-fourth of all the medico-legal inspections annually ordered in Berlin are upon the persons of new-born children, Casper was led to believe that the attempts made to conceal the bodies often occasioned such injuries as caused a legal investigation to be instituted. As a contribution to the elucidation of this point, twenty-five experiments were made upon the bodies of newly-born children. From a height of thirty inches, ten infants were dropped upon an asphaltum and fifteen upon a stone pavement. There were no visible injuries to the surface produced, but in twenty-four cases fractures of the skull were found. The fractures were distributed as follows: one parietal, sixteen times; both parietals, six times; once the parietal and frontal of the same side; once the frontals of both sides; and once the occipital had sustained a fracture. Numerous fractures were not found. The peculiar form of injury is also worthy of notice. Almost always one, two, or three fissures extended from the parietal protuberance to the margin of the bone, and sometimes extending across the sagittal suture to the parietal of the opposite side; twice a small portion of bone was broken off. Twice, when the body was allowed to fall from the table, fracture of the parietal resulted. When the head was trodden upon by a heel, fractures were always produced, not only in the parietal touched, but in the opposite bone, which looked much as if done in life. Extensive injuries were produced by striking the head against a table or wall. Four bodies were placed two or three inches under ground which was then stamped level; in three of the cases fractures resulted. No result was obtained by compressing the head with the

¹ Henke's *Zeitschrift. f. Nat. Med.*, xviii. p. 88.

hands, or by falling suddenly upon the child placed upon a hard surface. Compressing the head into a narrow box was attended with no result in two cases, but in a third a slight cleft extended from the lambdoidal suture into the left parietal bone, while the coronal suture was somewhat separated. Extensive injuries were easily produced by blows with a mallet or hammer. In all the cases the fractures were like cracks in glass. In five only, out of sixty fractures, were serrations present. Detachment of dura mater, separation of sutures, extravasations of blood beneath the pericranium, and coagulations at the seat of fracture are not peculiar to the living. More or less coagulated extravasations were pretty constantly found, and the other appearances mentioned were not infrequent. In conclusion, we are warned that the foetal skull, like that of the adult, may be more resistant after death than it is during life. The cases are perhaps too few to establish laws, but coming as they do from so high an authority, are worthy of the most careful consideration.

§ 178. 4th. *General considerations.*—The reader will not fail to perceive, that in the considerations upon infanticide now presented, the author has not taken up all the objections which are usually urged against the various points in the medical evidence; to have done so, would not merely have unduly lengthened the chapter, but have presented the subject under an aspect of obscurity and difficulty which it really does not in itself possess. It has appeared to him that the simplest and most perspicuous mode of presenting the subject was one in which it should be entirely divested of the trivial and irrelevant objections which are often thrown around it, and which are by no means essential for a correct understanding of it.

§ 179. The discussion on this subject may be appropriately concluded by some general considerations. In every case of suspected infanticide the following questions, says Böcker, arise:—

1. Did the death occur in a natural manner?
2. Could it have been prevented by proper precautions?
3. Is the mother guilty of not having employed them?
4. Was it caused by violence on the part of the mother?
5. If traces of violence exist upon the child, did the mother inflict them?

It must be admitted, however, that medical testimony alone is not competent in all cases to solve these questions, which can only be answered by a careful comparison of all the circumstances of each case.

§ 180. It is a fundamental principle laid down by Henke that death by violence is by no means to be inferred from the fact that the child was born alive. Even where marks of death by violence exist, it does not follow that the child was murdered. In the former case it may have perished in consequence of some disease incompatible with its life, or have been suffocated by the caul upon its face, or by its lying in a pool of blood and water, or in a mass of feces, or under a limb of the mother while in a state of exhaustion or unconsciousness ; or, in consequence of there being no help at hand, or of the unwillingness of the mother to betray her condition, the child, may be suffocated, or may perish from exposure to cold, etc. While, says Casper, we refuse to be imposed upon by the "impudent lies" which women do not hesitate to tell to conceal their guilt, we should not forget that the dangers to new-born children are very numerous, and that, without any criminal intent upon the mother's part, the child may perish from any of the causes just mentioned, from an injury to the head, from constriction of the navel-cord or hemorrhage following its rupture, from falling into the privy or a close stool, etc. Even apparent marks of violence must be cautiously interpreted. Prints of finger-nails upon the head and face of the child may have been made by the efforts of the mother to extract the child after the birth of its head, and even a dislocation of the neck, under the circumstance, must be regarded as within the limits of possibility. But if the marks referred to should be accompanied by others which can only be explained by intentional violence, then the former must be more seriously interpreted. Yet it must not be forgotten that many marks of accidental injury are with difficulty to be distinguished from such as are feloniously inflicted. Care should also be taken not to confound these with marks which may have been made after death in recovering the body from cess-pools, privies, and similar places, or which are merely signs of the voracity of fishes, hogs, rats, etc. In fine, the duty of the medical jurist, called upon to investigate cases like those under consideration, should be to preserve the strictest impartiality, to avoid being biased by his sympathy with the misfortunes of the accused, upon the one hand, or, on the other, by his abhorrence of her imputed crime, and to endeavor to give its just weight, and no more, to every circumstance which the investigation brings to light.

BOOK II.

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CHAPTER I.

DOUBTFUL SEX.

§ 181. THE word *hermaphroditism*, which at one time was used to describe the union of the organs of both sexes in one individual, is now generally applied to all those cases in which doubts exist concerning the real sex, in consequence of some aberration from the normal type of the genital organs. The word can no longer be used in its original acceptation, for most certainly there is no authentic case of self-impregnation recorded, nor even of the association of the generative functions of both sexes in one person. The cause of these deviations from the usual form may be found in the earlier stages of embryonic development; but an exposition of the present state of medical knowledge relative to the processes of faulty evolution would here be out of place.

§ 182. The practical question which we have to determine is, how far is it possible to discriminate the true sex of a living person? The solution of it is attended with no little difficulty, and in some cases is indeed impossible. The physician will be chiefly embarrassed in the case of children, since the important indications derivable from the general as well as local sexual development will be wanting. It should not be forgotten that even after death a positive opinion is, in some cases of hermaphroditism, hardly warranted by the most care-

ful anatomical inspection. The male and female sexual organs, imperfect in development although distinctive in character, may be so evenly distributed that it will not be possible to know which predominate. Or, on the other hand, the traces of sexual organs may be so indistinct, that we can give them no appropriate sexual name. Hence the reader will perceive how much more excusable is reserve in pronouncing an opinion upon the sex of a *living* person, the essential generative organs being concealed from our observation. We can only hope to approximate to the truth, by observing whether there is not some regularity in the freaks of nature, and thus discover, if possible, some uniform correspondence between the visible deviations and those which are hidden from our view. With this object, the cases of hermaphroditism may be divided into the *apparent* and *real*, besides which there is a certain number in which literally *no* sexual organs exist. In the cases of *apparent* or *false* hermaphroditism, either male or female character predominates, but the former much more frequently.

§ 183. 1st. *Male hermaphrodites*.—In these the only anomaly is external, the internal organs having their natural conformation and development. The penis exists, more or less developed, with an urethra either normal or opening at variable distances between the glans and the pubis—a condition which is called *hypospadias*. The scrotum is divided or cleft, and thus presents a resemblance to the vulva, but neither *nymphæ* nor vagina are found, although not unfrequently there is a shallow depression or cul-de-sac between these false labia, which is lined with a delicate skin and bears no very distant resemblance to the vaginal entrance. The testes are found on each side of the divided scrotum. The history of a supposed female named Marie Rosine Göttliche is related, who had been in the practice of cohabitation with the male sex. Her genital organs were formed in the manner here described.¹ Nägele gives a case of twins who were considered as female until their seventeenth year. At this time it was discovered that they were male, the penis being imperforate, and the divided scrotum resembling a vulva, but containing a testis on each side.² The case of Adelaide Préville, who lived in the married state for a long time and on good terms with her husband, is

¹ Casper's Wochenschrift, 1833, No. 3.

² Siebold's Handbuch, p. 95.

related in full by St. Hilaire, with a number of other cases which will also fall under the above general description.¹ Persons with these malformations are not necessarily impotent, except where the urethra opens at or near the base of the penis. In consequence of the position of this orifice, the semen cannot be ejaculated into the vagina, but escapes along the sides of the cleft in the scrotum. Impregnation may, however, take place, if the urethra opens far enough forward to allow of the inclusion of its orifice within the vagina, and instances of impregnation by persons affected with a considerable degree of hypospadias are upon record. Sometimes the only deficiency observable in this class is the absence of the testes from their usual location. This condition is liable to be mistaken for another, but far more important deviation from the natural type in the internal organs of generation (mentioned further on), since in both the scrotum is empty. But, in this case, the testes are not really deficient, but have remained in the abdomen, instead of descending as is usual in the ninth month of foetal existence. In the case of persons in this condition, the power of procreation is unaffected, provided the testes are healthy.² This anatomical defect is very rare. Siebold states that of 37,000 recruits in Würtemberg, only twenty-four were found in whom the testes had not descended.³

§ 184. 2d. *Female hermaphrodites*.—By far the greater number of these owe the doubts concerning their sex to an unusual size of the clitoris. Commonly associated with this circumstance, are an unfeminine appearance, more or less beard, and a rough and masculine voice and manner; although the sexual desires of these persons are violent, they are usually barren. The usual length of the clitoris in the adult female is about half an inch, but Remer mentions having seen a clitoris an inch long in a girl seven years of age, and Home,⁴ one of two inches long and as thick as the thumb, in a negress twenty years old. In addition to this hypertrophied condition of the clitoris, an imperfect urethra with one or more openings is often found, and, at the same time, a constriction of the vagina to such a degree that it becomes almost imperforate. Such was the anatomical condition in Marie Lefort; she had men-

¹ Hist. des Anomalies, t. ii. p. 53.

² See § 201.

³ Handbuch, p. 82.

⁴ Philos. Trans., 1799, p. 163.

struated regularly from the age of eight years until her death at thirty ; the existence of a uterus was clearly established. Her voice was masculine, and she had a thick and strong beard.¹ Sir Astley Cooper examined the body of a charwoman, aged eighty-six years, who presented these deviations. He says, she differed from other women in the magnitude and length of the clitoris, in the absence of the external orifice of the vagina, which began in the urethra itself, and in the imperfect development of the ovaries.² A woman twenty-five years of age, on account of her notorious commerce with both sexes, was placed under strict police supervision. Resorting to masturbation, her health became so much impaired that she died in the course of sixteen months. The external genitals were found to have their natural conformation, with the exception of the clitoris, which was three and a half inches long and three inches in circumference, and imperforate, except at the base. The uterus and one ovary were rudimentary, and the general conformation of the breasts was masculine, although, owing to the occurrence of a trifling periodical discharge, she was considered to be a woman. It was proved that this person had been guilty of the most astonishing and unnatural excesses with young people of both sexes.³ A child described by Mr. E. Smith may be placed in the same class, as all the female organs were complete ; the only anomaly being that the urethra opened in two places, and the clitoris bore some resemblance to the penis.⁴ In a black female subject, dissected by Dr. Jno. Neill, the clitoris was five inches long and one inch in diameter, and resembled a penis, except that it was not traversed by a perfect urethra. The perineal opening was not larger in diameter than a catheter of average size, and the vagina was extremely narrow. On one side of the penis existed what appeared to be a scrotum, but which contained an irreducible omental hernia. This gave the feel of a testicle, but no true glandular structure or excretory tube could be detected. The internal organs were completely female, although not completely developed. The general habitus was feminine.⁵ A very similar

¹ St. Hilaire, *Hist. des Anomalies*, t. ii. p. 74.

² History of a supposed Hermaphrodite, by Robert Merry, Surgeon. Guy's Hosp. Rep., Oct. 1840.

³ Henke's *Zeitschrift*, Bd. 44, S. 183, by Albert, of Euerdorf.

⁴ Lond. Med. Gaz., vol. xxxiii.

⁵ Quarterly Summary of Trans. Coll. Phys. Philada., N. S., vol. i. No. 3.

case is reported by Dr. F. L. Parker.¹ The subject of it was of the negro race, was regarded as a man, bred as a cooper, and had been married as a man. The genital organs were exclusively those of a female, except the clitoris, which measured, after death, an inch and three-quarters externally, and in its entire length five inches. A perfectly analogous example in which the clitoris was from two to three inches in length, is reported by Dr. J. Mason Warren. The subject was of Irish birth, bore a man's name, and had a masculine appearance.² Dr. Bainbridge has reported the case of a female whose clitoris was five inches in length and of the diameter of the quiescent penis of an adult. This malformation was discovered while the woman was in labor.³ Mr. Wells has described the case of a person in whom the general external organs were those of a hypospadic male; but there were no testes, and a small uterus and one ovary existed.⁴ The case related by Dr. Mayer, of Bonn, which gave rise to much discussion, and which is usually classed among the cases of mixed sex, may with more reason, we think, be placed under this head. The only male organs were a (so called) penis, which was only two inches long, imperforate, and partly concealed under the *mons veneris*. On the other hand, the orifice of the urethra was situated as in the female, there was a large vagina, a uterus with its appendages, and a defective ovary on one side, and (what is called) a withered testis on the other. We cannot avoid holding some doubts concerning this last-mentioned organ. From the absence of any account of the seminal tubes, deferent vessels, or seminal vesicles, and the evidently rudimentary nature of this body, it might as properly have been termed an ovary. This supposition would, moreover, have been favored by its position. However this may be, it is evident that the female character greatly predominated. When twenty years of age, this person menstruated on three different occasions. A certain number of cases are recorded in which a prolapsed uterus or an extroverted bladder has grossly imitated the male organ, but these cases are so easy of detection, and have so little claim to be classified with per-

¹ Charleston Med. Journ., Jan. 1859, p. 57.

² Am. Journ. Med. Sci., Jan. 1860, p. 123.

³ Lond. Times and Gaz., Jan. 1860, p. 45.

⁴ Id. Feb. 1860, p. 177.

manent anomalies of evolution in the sexual organs, that it is not necessary to dwell upon them.¹

§ 185. 3d. *Real hermaphrodites*.—Not a few authors have doubted the existence of persons entitled to this designation, but there can, at the present day, be no question of the fact. It is, of course, not meant that the union of the *functions* of both sexes in one individual ever occurs, but merely that the essential generative organs of both may coexist.² It will be seen from the following cases that this abnormal condition is found in different degrees.³ The first we will mention is the case observed by Petit, and communicated to the French Academy in 1820. The subject was a soldier who died of a wound at the age of twenty-two years. The penis was normal, the scrotum empty, the testes small and soft, occupying the position of the ovaries, but provided with epididymis and vasa deferentia. The seminal vesicles and prostate gland likewise were present. The uterus opened into the urethra at the neck of the bladder; the vagina was absent. It is stated that the Fallopian tubes were found, but they were probably in an imperfect condition.

§ 186. A more recent case, described by two of the most eminent pathologists of Germany, Kiwisch and Kölliker, is of great interest. The individual died at the age of 33 years. The external genitals were, a perfectly normal penis, with a rugose but empty scrotum. The uterus was perfect, somewhat longer than usual, but in its ordinary position. The vagina was rudimentary, and opened into the prostatic portion of the urethra. The Fallopian tubes were $3\frac{3}{4}$ inches long, with imperfectly developed fimbriæ. The round ligaments had their usual position and attachments. In place of the ovaries were found testes, provided each with an epididymis and a deferent duct which led to the inguinal ring, and, turning to the uterus, followed its sides and finally opened into the prostate gland. This latter body was of normal size; on each side of it were vesiculæ seminales.⁴

¹ For cases exemplifying these deceptions, *vide* Saviard (*Rec. d'Orbs. Chirurg.* p. 150). Home (*Philos. Trans.* for 1799). (*Ed. Med. and Surg. Journ.*, vol. i. p. 54.) St. Hillaire (*Hist. des Anomal.*, t. i. pp. 272-277).

² There is, however, no case recorded in which two testicles, and two ovaries, the essential indices of sexuality, existed in the same persons.

³ A very remarkable case occurring in the 17th century is recorded by Dr. Thomas Allen (*Philos. Trans. Abr.* i. 24), and another, scarcely less so, is that of Hubert, who died 1767, (*Dict. de Méd.*, xxi. 104).

⁴ Kiwisch (*Klinische Vortraege Abth. II. Prag.* 1849). This thoroughly
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MM. Bouillaud and Manec have reported a case in which the person attained the age of sixty-two years, and had lived and been married as a man. The general appearance was feminine, with the exception of the beard. The external organs consisted only of a penis with the orifice of the urethra at the base of the gland. A loose fold of skin occupied the place of the scrotum. The internal organs were, however, completely feminine, with the exception of the prostate gland, which occupied its usual position. The vagina opened into the membranous portion of the urethra. It is not stated whether the menstrual function was performed.¹ A curious and well-described case is that of Ackerman:² An imperforate penis, a vulva containing a normal testis on each side, a common vagino-urethral canal, and vasa deferentia opening on either side of the os uteri, but entering the walls of the uterus at the points whence usually spring the Fallopian tubes. Perhaps the most remarkable case of double sex is that examined by Dr. Horace A. Ackley, Professor of Surgery in the Cleveland Medical College, and reported by Dr. George Blackman.³ The person from

authenticated fact of the co-existence of the prostate and uterus in one individual is a serious blow to the cultivators of transcendental anatomy, who have maintained its impossibility. Weber, Leuckardt, and many other authors consider the prostate gland to be a rudimentary uterus, or rather the analogue of this organ in the female. Another example of the co-existence of these two organs in a person 60 years of age, is furnished by Lauger. The uterus was attached to the upper part of the prostate gland, and there were two testicles (*Archives Gén. de Méd.*, 5ème sér. vii. 720). An equally marked case (*Hemaphroditismus lateralis*) of the co-existence of an ovary and a testicle in a new-born child is recorded by Meyer, of Zurich (*Vichrow's Archiv*, xi. 420).

¹ *Journ. univ. et hebdom. de Méd.*, t. x. p. 467.

² *Infantis Androgyni historia et iconographia*. Jena, 1805.

³ Am. *Journ. Med. Sci.*, July, 1853, p. 63. Another singular case exemplifying the condition called lateral hermaphroditism, has been reported by Dr. Banon. The penis was of the usual size in the adult, and imperforate, although subject to erections. Beneath were the external female parts, nearly perfect; the orifice of the uretha was placed as in the female, the vagina was rudimentary, but was provided with a hymen, the prostate was absent; the uterus was small but well formed. There was one testis and one ovary, the vas deferens opened into the uterus. This individual had never menstruated, preferred manly exercises, and in conformation presented a curious intermingling of the characteristics of both sexes. Am. *Journ. Med. Sci.*, July, 1852, from Dublin Med. Press; or fuller, Dublin Quart. *Journ.*, Aug. 1852, p. 66. The somewhat similar case of Angelique Courtois, Follin. *Gaz. des Hôp.*, Dec. 1851, is more particularly interesting, from the fact that the single, well-formed, and undoubted

whom the parts were removed was about twenty-six years of age, and had been employed as a servant. "The history of this individual, as furnished by Prof. Ackley, is briefly as follows: Stature large; external conformation, with the exception of the hips, male; beard moderate; habits solitary, and had a dislike to women; menstruation per penis, monthly; this was always attended with much suffering, and during one of these menstrual periods he died from cerebral congestion. After death, the body found its way to the Cleveland Medical College." Upon dissection the disposition of the sexual organs was the following: "The penis was large, the scrotum empty, a perfect uterus with pervious Fallopian tubes and ovaries, testes on each side above the ovaries and excretory ducts leading from them, a vagina opening into the neck of the bladder, and a prostate gland." The inner surface of the vagina was reddened, and its cavity contained what was supposed to be menstrual blood.¹ This statement was testis had no excretory duct, but lay under a pervious and fimbriated Fallopian tube. There were no ovaries, seminal vesicles, or prostate.

¹ Other cases of menstruation through the penis, or from an orifice at its base when imperforate, are on record. One is reported by Dr. Harris, of Virginia, and another by Dr. Barry, of Connecticut, in which it was necessary to determine the sex on account of a denial of a person's right to vote. (Am. Journ. Med. Sci., 1847, July.) Prof. Simpson, of Edinburgh, states, that he has been informed, on credible authority, of two instances where, in males,(?) the menstrual discharge was perfectly regular in its occurrence and considerable in quantity. One of these persons was seventeen years of age, and the other had been married for several years, and his wife had no children. (Art. Hermaphroditism, Cyc. of Anat. and Physiol.) Dr. Blackman saw in the Northern Hospital at Liverpool, a sailor from the American merchantman Rappahannock. He says: "This person was about thirty years of age, and with the exception of the breasts, which were large, had the general appearance of a male. The penis, however, was short, and the scrotum somewhat cleft, so as to resemble in some respects the external labia of the female. At the time of my examination menstrual blood was passing through the penis, and we believe this was a regular monthly occurrence." (Am. Journ. Med. Sci., July, 1853.) A case apparently similar in anatomical conditions to that of Suydam, above referred to, is reported by Dr. Coste, of Marseilles. His patient was 21 years of age, the penis was of the size of a boy's of 12 or 14 years, it was imperforate and the uretha opened at its base. The menses flowed from this orifice at regular periods. There was no external orifice of the vagina, the perineum was covered with hair, the labia majora were rudimentary, and on the right side there was a body like a testicle. The habitus was feminine, and there was no beard. An operation was performed to make an artificial vagina, and eight months afterwards she was married. (Med. Zeitschrift für Geburtzkunde von Busch, etc., 1836, Bd. 4, H. 2, p. 267.)

afterwards supported by an examination of the parts made Dr. W. L. Burnett, of Boston.

§ 187. The necessity, however, of the most minute and conscientious examination of such remarkable cases as this has since become apparent, for we find that the internal sexual organs were not so distinctive as represented. Dr. J. B. S. Jackson, of Boston, in addressing the Society for Medical Improvement on this subject,¹ stated that he had been permitted by Prof. Ackley to examine the specimen. He found no trace of the os tincæ, but the uterus passed insensibly into the vagina. This last was extremely small, measuring in the smallest part, on the inner surface, not more than four or five lines in circumference. Dr. J. found some thickening of the tissues about where the ovaries should be, but it was ill-defined and slight; “and it would not have been thought of, except in connection with the present question.” Upon one side an incision was made into this questionable part; but nothing like a Graafian vesicle was seen, nothing but a loose cellular, or fibro-cellular, tissue. The size and structure of the testicles, so far as examined, were quite normal, and, it is said, that there was an epididymis, although the existence of a vas deferens was not clearly ascertained. The vesiculæ seminales were not found, and the prostate gland, Dr. Jackson says, had not been demonstrated.¹

§ 188. 4th. *Absence of sexual organs.*—Siebold states that he has in his museum a child with no external genitals. Notwithstanding this, two testicles were found in the abdomen. This case is related in full in Faber’s “*Duorum monstrorum humanorum descriptio anatomica.*”² He also refers to another case of a child, three years old, in whom no internal generative organs were found, and externally only an urethral orifice.²

§ 189. The foregoing enumeration of anomalous conditions of the

¹ Am. Journ. Med. Sci., Oct. 1853. For other cases *vide* Beck’s Med. Jurisprudence, and St. Hilaire’s *Histoire des Anomalies*, t. ii. p. 99.

² For similar cases *vide* Ström in Svenska Lakaré-Saellskapets Handlingar, Bd. i. H. 1. Also in Am. Journ. Med. Sci., vol. ii. Also in Henke’s Zeitschrift, Bd. 44, § 185. A stillborn seven months’ child had no external genitals. A very singular example of this malformation is published by Goschler (Prager Vierteljahrs, 1859, iii. 89). It was presented by a man twenty-seven years old. There was no penis, but the mons veneris and scrotum were perfect, and behind the latter and just in advance of the anus, was a small opening which gave exit to the urine, and to sperm also when an erectile fleshy excrescence upon its edge became excited by friction.

sexual organs will suffice, we think, to convince the reader, upon careful examination, that the determination of sex in a living person presenting any of those which are external, is attended with much difficulty, in consequence of the absence of a uniform correspondence between the outward and inner defects. It will also be seen from some of the cases, that reliance cannot be placed upon the general conformation of the individual nor upon the tastes and habits, since experience shows that the indications derived from them are often fallacious. Practically, therefore, the question must often remain unresolved, or be determined solely by the sexual predominance in the external organs alone. It may be observed, however, that the rarity of *real* duplicity of sex, or of the complete absence of the sexual organs, compared with the ordinary cases of presumed hermaphroditism, from the penis being imperforate, the testes not descended or the clitoris excessively developed, is so extreme, that the question will, in its legal relations, seldom require elucidation.

§ 190. In conclusion, we cannot forbear referring to an instance¹ in which an operation was performed with the object of depriving a child "of that portion of the genital apparatus which, if permitted to remain until the age of puberty, would be sure to be followed by sexual desire, and which might thus conduce to the establishment of a matrimonial connection." The child was three years old, had been considered a girl until the age of two years, when she began to evince the tastes, disposition, and feelings of the other sex; she rejected dolls and similar articles of amusement, and became fond of boyish sports. "There was neither a penis nor a vagina; but, instead of the former, there was a small clitoris, and, instead of the latter, a superficial depression, or *cul de sac*, covered with mucous membrane, and devoid of everything like an aperture or inlet. The urethra occupied the usual situation² and appeared to be entirely natural; the nymphæ were remarkably diminutive; but the labia were well developed, and contained each a well-formed testis, quite as large and consistent as this organ generally is at the same age in boys." After mature consideration an operation was resolved upon and the testes removed.

¹ Case of Hermaphroditism, involving the Operation by Castration, and illustrating a New Principle in Judicial Medicine, by S. D. Gross, M.D., Prof. of Surgery in the Medical Department of the University of Louisville.

² Whether this was the usual situation in the male or female does not appear; it was probably the latter.

They, as well as the spermatic cords, are described as being *perfectly formed in every respect*. Three years after the operation the disposition and habits of the child had undergone a material change, and she took delight in all feminine occupations. The author proposes this example as a precedent in similar cases. We sincerely hope that it may not be followed. The operation removes merely the *external*, and in cases like this the very distinct evidence of sex, and hence only adds to the doubts of the rightful sexual character. It does not necessarily extinguish the sexual instinct, nor deprive the person of "his only incentive to matrimony," and, finally, in no way relieves him from the odium or aversion with which the malevolent or ignorant may regard him.

CHAPTER II.

SEXUAL DISABILITY.

§ 191. 1st. *Sterility*.—The causes of sterility are numerous. Many of them are known and some of them are curable; but there are also many altogether beyond the power of medical science to discover or remedy. Among the removable causes of sterility may be first mentioned an *imperforate hymen*. This membrane is sometimes quite thick, dense and fibrous in its structure, opposing a complete obstacle to the passage of the catamenia, and rendering impregnation impossible.¹ It is remedied by incision and gradual dilatation. If the hymen be not, however, completely imperforate, impregnation may occur. Of this fact examples are recorded by Baudelocque, Nysten and others. A more recent case is furnished by Dr. Howard Smith.² The vagina may be, congenitally, extremely narrow, or have become occluded from inflammation and its consequences. The mouth of the womb is also subject to the same accident and this in connection with

¹ For cases, see Brit. and For. Med.-Chir. Rev., xxi. 552. As to conflict of laws on this topic, see Whart. Conflict of Laws, §§ 148 *et seq.*

² New Orleans Med. News, June, 1858.

a narrowing of the upper portion of the vagina, is supposed to be a frequent cause of sterility. In all these cases, however, a cure is possible.

Menstrual irregularity, displacements of the uterus, with extreme irritability of this organ, prolapsus, intra-uterine tumors, such as polypi, are frequent causes of sterility, but are also generally under the control of the physician. Some authors have stated that uterine cancer is a certain cause of sterility; this opinion is, however, not sustained by facts, numerous instances being recorded of impregnation in this disease. Dr. Lever mentions several cases. Siebold says that he has, in his pathological collection, a cancerous uterus containing a seven months' child.

§ 192. Of the absolute and incurable causes of sterility, those depending upon *malformation* are the only ones of practical importance. An imperfect development of the sexual organs has been frequently described. The following are some of the more striking cases :—

§ 193. Dr. Meigs relates a case of entire absence of the vagina, the external sexual organs being perfectly natural. An incision was made, by Dr. Randolph, three inches and a half in depth, but he could find no vagina.¹ Dr. Oldham reports the case of a servant girl, whose health had been delicate for some time. "She had not menstruated, suffered periodical pains in the pelvis, or any vicarious bleeding. She had a dull, inanimate, and rather timid look, with the voice and articulation of a delicate female. Her mind was apathetic, and she was sexually indifferent. The chest was flat, and the mammary glands scarcely developed. The pelvis was well formed. The mons veneris, external labia, nymphæ, and clitoris were normally developed, and the first covered abundantly with hair. The situation of the orifice of the vagina was occupied by a raised raphe of mucous membrane, but there was no aperture." A catheter being introduced into the bladder, and the finger into the rectum, no solid intervening structure and no trace of uterus could be discovered.² In the case of a married woman, who died at the age of seventy, the internal organs were but slightly developed, and a shallow depression represented the vagina. On inspection from within the pelvis, this organ

¹ Velpeau's Midwifery, p. 114.

² Guy's Hosp. Rep., vol. vi. p. 362.

was found to be totally wanting. Rudimentary ovaries existed in the abdomen, and rudimentary separate halves of the uterus were found in the pelvis.¹ Two other examples, in all probability, of the same malformation are reported, the one by Dr. J. M. Warren,² and the other by Dr. C. Coates.³ Troschel relates the case of two sisters in whom the uterus was wanting.⁴ Siebold examined a woman, twenty years of age, in whom the vagina was like that of a new-born child; no uterus could be discovered by an examination *per rectum*.⁵ Dr. Rüttel had under his care a woman twenty-seven years old, of small stature. The external genitals were like those of a child nine or ten years of age; the vagina was smooth, very narrow, and hardly two inches long; the mouth of the uterus hardly perceptible, and the uterus itself of the size and shape of an olive. The breasts were undeveloped.⁶ A curious case is quoted by Siebold, in which, although there was no external sexual organs whatever, nevertheless the woman became pregnant. The impregnation was effected through the rectum, in which a small orifice communicated with the vagina. At the approach of labor, this opening was widened by the knife, and the woman was delivered of a child which lived six hours.⁷ Mr. Hunt related to the Medical Society of London, the case of a lady, aged thirty, of refined mind and feminine development, who consulted him for stricture of the rectum. The meatus urinarius was more capacious than usual, and there was no *vaginal aperture*, the perineum being continued from the anus to the meatus. No trace of the fundus uteri or of ovaries could be felt by the rectum. The clitoris and labia were normal, the mammae well developed, and sexual feeling was

¹ Edinb. Month. Journ., N. S., vii. 230.

² Bost. Med. and Surg. Journ., May, 1857, p. 297.

³ Times and Gaz., July, 1858, p. 6.

⁴ Rust's Magazin, Bd. 37, S. 163; Gaz. Méd., 1851, p. 9, by Dr. Zeihl, of Nuremberg. Total absence of uterus in a woman fifty-seven years of age observed after death. Dr. Meigs relates two cases of total absence of uterus, but with otherwise perfect sexual development, in his own practice. (Treat. on Obstet., p. 131.) Dr. G. S. Crawford gives another case of absence of uterus. (N. W. Med. and Surg. Journ., Nov. 1850.) Dr. Cummings found the uterus half an inch long, and the ovaries mere lines, in a woman who had never menstruated. (Ed. Month. Journ., Sept. 1854, p. 275.) Dr. Chew, of Baltimore observed a case in which the uterus was absent. The woman was twenty-two years of age, and had never menstruated. (Am. Journ. Med. Sci., 1840, p. 39.)

⁵ Handbuch, p. 91. ⁶ Henke's Zeitsch. Bd. 47, S. 250. ⁷ Handbuch, p. 88

admitted to exist, probably in its normal degree. She had never menstruated, nor had there been any vicarious discharge or periodical inconvenience. Dr. Murphy mentioned a case in which the vagina terminated in a *cul de sac*, and there was no sign of a uterus. The woman was handsome and well formed.¹ A most curious, and we believe unique case is that recorded by Morgagni (67^{ème} lettre, § 7), of a woman whose vagina opened in the abdomen *above the umbilicus*, and who became pregnant, and was delivered of a living child by a cutting operation from which she recovered.

§ 194. Finally, there are some causes of sterility which are relative in their nature. Such a disproportion between the genital organs of the two sexes as to render intercourse extremely painful to the female, may be taken as an example. Other causes, of a physical nature, are sometimes as operative as the physical impediments before spoken of. For the most part they are exceedingly intangible in their nature. In the *causes célèbres* an amusing instance of want of sexual harmony is given by Pitaval. Two gentlemen of rank, very much of the same age and personal appearance, were both married to wives who proved unfruitful after several years of marriage. The two couples at last determined to proceed to a celebrated watering place, in the hope of deriving some benefit from the change and the use of the springs. On the way, they put up at an inn and retired for the night. But the two wives had preceded their husbands to bed, and each of the latter mistook his friend's room for his own. In consequence of the mistake, both of the ladies proved with child.

§ 195. The functions of menstruation and reproduction are generally coincident. Hence, as a general rule, a female is not susceptible of impregnation before the catamenia have appeared nor after they have ceased. Like all other physiological rules, these will be found to have exceptions. Many instances are on record in which women who have never menstruated have become mothers.² Cases of precocious menstruation are also numerous, and many of them well attested.

§ 196. Mr. Whitmore relates an interesting instance of precocious development in a female child. The catamenia appeared a few days after birth, and returned at regular intervals of three weeks and

¹ Am. Journ. of Med. Sci., July, 1872, p. 275.

² Vide Whitehead on Abortion, etc., p. 223; also Capuron, Méd. Lég. des Accouchemens, 96.

two or three days until her death, at the age of four years. The development at this age was equal to that usual at ten or eleven. The mammae were unusually large; the mons veneris was covered with hair, and the development of the genitals was considerable. It is stated that she manifested at her monthly periods the reserve usual to women at such times.¹ Dr. Charles Wilson, of Pennsylvania, met with a child five years old who had menstruated irregularly from the fifth month of her life. She was of the usual stature of children of her age, but very stout and fat. Her breasts were about the size of a well-developed adult virgin's, and the pudendum was thinly covered with black hair.²

§ 197. Velpeau quotes the case of a young girl, in the Havana, whose menses appeared at the age of 18 months, and continued regularly afterwards. The child, moreover, exhibited in her development all the characteristics of puberty. A girl at New Orleans was born in 1837 with her breasts developed and the mons veneris covered with hair. Her catamenia appeared at the age of three years, and continued to return every month thereafter. A case is mentioned in the Lancet where menstruation commenced at the age of two years.³ Another is reported where it began in the tenth year; the girl became pregnant between the eleventh and twelfth, and bore a child.⁴ A similar case is reported by Dr. J. B. Walker, in which menstruation commenced at the age of eleven and a half years, and the girl was delivered of a child when only twelve years and eight months of age.⁵ Rüttel refers to a case by Haller, where a girl of nine years of age became pregnant; and D'Outrepont met with others of pregnancy at the ages of nine and thirteen.⁶ Another instance may be added in which menstruation commenced in the first year and pregnancy in the ninth. The girl was delivered of a child weighing seven and three-quarter pounds. The case occurred in Kentucky, and is reported by Dr. Rowlett.⁷ Mr. Smart has given an account of a girl who was born at Manchester, Eng., and began to menstruate at the age of three years and six months, and continued regularly to do so until the date of the observation, when she was four years and five

¹ Am. Journ. Med. Sci., Oct. 1845, p. 430, from Ed. Month. Journ. of Med.

² Philada. Med. Exam., Dec. 1853, p. 746.

³ Jan. 29, 1848.

⁴ Lond. Med. Gaz., Nov. 1849.

⁵ Bost. Med. and Surg. Journ., Sept. 9, 1846.

⁶ Henke's Zeitsch. 1844.

⁷ Transylvania Journ., vol. vii. p. 447.

months old. She had then the aspect of a woman of small stature, a full bust, prominent breasts and nipples, and hair an inch long upon the pubes.¹

§ 198. A. Menzel reports the most recent case.² The breasts were noticed to be unusually developed immediately after birth, and, when the girl was four years old, had attained the size usual at eighteen. At the age of four years there was a reddish discharge from the genitals, while the labia majora and mons veneris were covered with moderately thick hair, and the uterus could be felt through the rectum. Except, however, some bashfulness at the time of the examination, the child had no feelings different from other girls of her age.

§ 199. The usual period for the *cessation of the menses* and, consequently, the capacity for child-bearing, is from 45 to 50 years; but cases could easily be multiplied showing that occasionally they continue even to the age of 75 years. Indeed, a case is quoted by Orfila in which they continued until the 99th year. This woman menstruated first at the age of 20, bore her first child at 47, and her seventh and last at 60.³

§ 200. Many of the cases in which menstruation in old women is reported are probably apocryphal—hemorrhage proceeding from some disorganized tissue being mistaken for it. Nevertheless, many of these instances of late menstruation and pregnancy are genuine. When the monthly periods continue to return after the ordinary time for their cessation, the female remains susceptible of impregnation, but she will rarely be capable of conceiving after this function had ceased. The only case that we have met with is one quoted by Dr. Taylor, from the *Lancet*, in which a lady became pregnant between eight and nine months after the final cessation of the discharge. In this case, however, the lady was only 44, and consequently had not arrived at the usual season for its cessation. The discharge had, it is stated, been decreasing gradually for nearly two years before it entirely ceased. If this function continues, however, the woman is liable to conceive. Dr. Rüttel observed in twelve women that they bore their last children between the ages of 45 and 50. He refers to a case in Schmidt's *Jahrbuch* in which a woman who was married at 19 did not bear a child until she was 50 years old.⁴ Ottinger and

¹ Times and Gaz., July, 1858, p. 98.

² Wien Med. Wochenschrift, 1871.

³ Méd. Lég., 4ème ed. 1, 257.

⁴ Henke's Zeitsch. 1844, p. 251.

Cederschjöld met with cases of parturition and menstruation at the ages of 50 and 53; and Nevermann¹ found, out of 1000 cases, that 436 children were born by females at the following ages: 101 at 41, 113 at 42, 70 at 43, 58 at 44, 43 at 45, 12 at 46, 13 at 47, 8 at 48, 6 at 49, 9 at 50, 1 at 52, 1 at 53, and 1 at 54 years. From these facts, it is evident that the ordinary limits of the function of gestation are occasionally anticipated or transcended. Note must be taken of these rare exceptions in estimating the probabilities in any doubtful case.

§ 201. 2d. *Impotence*.—By this word is here meant the want of procreative power in the male, whether arising from a faulty condition of the external or internal organs of generation, or from any moral or physical causes. The causes of impotence are extremely numerous, and often obscure. Some of them are remediable by art and time; others are permanent and incurable. They may be conveniently examined by a division into those which depend upon the secreting portion of the generative apparatus, and those which depend upon some deviation of the copulative portion from its normal condition.

§ 202. (1) *Congenital absence of the testes*.—The only satisfactory example of this defect is a case related by Dr. Fisher, of Boston, in the twenty-third volume of the *American Journal of the Medical Sciences*. The post-mortem examination was minute and careful. All of the accessory parts of the seminal apparatus were present, except the testes. The penis was undeveloped, and the individual, who was forty-five years of age, had never experienced any amorous desires. There were a few scanty hairs upon the pubes, but there was no beard; yet the constitution was vigorous, and the habits of the person active. It is seldom, however, that this deficiency can be safely asserted during life, for, although the scrotum be empty, yet the testicles may have been retained in the abdomen. While in this situation, they may be rudimentary and defective, or not; for experience has shown that some *cryptorchides* have been remarkable for their sexual powers. One of the most remarkable cases of premature sexual development coinciding with non-descent of the testes, and reported by Dr. Lopez, of Mobile, in the *American Journal of the Medical Sciences*, 1843, p. 500, is that of a mulatto boy, aged three

¹ Méd. Lég. 4ème ed., 1, 257.

years ten months and fifteen days. His weight was eighty-two pounds; height, four feet and half an inch; width around chest, twenty-seven and a half inches; thigh, nineteen inches; head, twenty-two inches; length of penis at rest, four; circumference, three and a half; testes not descended; has whiskers, and hairy axillæ; and lifts a man of one hundred and forty pounds. The habit of body, scantiness of beard, and feminine voice, are not always safe indications of the absence of the testes, or of their defective condition, should they have been retained within the abdomen or in the inguinal canal. Our opinion in these cases should be very guarded, since the organs upon whose condition it is required cannot be inspected. In some cases, one testis only has descended; but if it be not diseased, the individual will be quite capable of fulfilling his conjugal duties. The rarity, however, of either of these conditions, may be judged from the fact, that in 10,800 recruits, Dr. Marshall found only eleven in whom a single testis had descended, and one where both were retained in the abdomen.

§ 203. (2) *Castration*.—If one testis only be lost, whether by accident, disease, or extirpation, the virile powers will not be impaired, unless the remaining one be imperfect or diseased. But, if the individual have lost both of these organs, he becomes, of course, incurably impotent. Yet it is a question of some medico-legal interest, whether impotence is an immediate result. A man who was castrated by Sir Astley Cooper stated that he retained the sensation of emission for twelve months, and the power of copulation, at rare intervals, for ten years, after the operation. Otto found the vesiculæ seminales still full of semen in a man who died nine months after he had castrated himself.¹ Ricord mentions the case of a man who was castrated on account of disease of both testes; he was also affected with a tumor of the cerebellum. He had, nevertheless, erections, and the most violent sexual desires.² Krahmer relates that a man who had excised both testicles with a razor, had an involuntary emission of semen on the eleventh night after the operation. Some of the older authors⁴ assert that the possibility of fruitful inter-

¹ Handb. der Pathol. Anat., p. 344.

² Bull. de l'Acad. de Méd., 1851, p. 687.

³ Handbuch d. ger. Med., 1851, s. 276.

⁴ Venette, Leipzig, 1698; Nic. Fontan, Obs. rar. Amstelod., 1641.

course after the loss of the testes, giving instances in illustration of it. It is also asserted, upon the authority of Aristotle,¹ Varro,² Sanches,³ and others, that animals have been known to be capable of propagation soon after they have been castrated. That the fact is authentic as regards animals may be admitted, without giving assent to the possibility of a like transaction upon the part of man. It is conceivable that an animal might attempt sexual intercourse immediately after castration; but the case has yet to arise in which the question of paternity would hang upon the decision as to the possibility of a man being capable of the same attempt.

§ 204. For how long a time, then, after castration, can the faculty of generation be retained? We believe that this question has yet to be answered. The cases cited above do not solve it. The erectile faculty of the penis is retained in eunuchs if they have been castrated after the age of puberty, and is in itself alone, or when attended with sexual desire, not indicative of procreative power. Nor is the sensation of emission, or even the actual extrusion of a liquid having some of the sensible qualities of the semen, sufficient evidence of it. Unless a microscopic examination reveal the presence of spermatozoa, which alone are characteristic of the fruitful semen, there can be no certainty that the secretion is more than the *liquor prostaticus*, or mucous discharge. The observation of Otto is, therefore, not complete. As for those instances in which pregnancy is said to have resulted from the cohabitation with their wives of husbands who had sustained the loss of which we are speaking, it is a matter of regret that the connection in them between cause and effect is not susceptible of demonstration.

§ 205. (3) *Diseases of the testes.*—These are numerous, but usually implicate one of the organs only; hence, as has been said before, if the remaining testicle be not affected, or if, indeed, as is sometimes the case, only a part of the structure is destroyed, the person will not be rendered impotent. It will not be necessary for us to dwell upon the special diseases to which the testis and its appendages are liable. A safe opinion, in cases of alleged impotence from

¹ Historia Animal., lib. i. cap. 4; lib. ii. 13.

² Re Rustica, lib. ii. cap. 5, “de quibusdam bovinis admirandum scriptum inveni, exemptis testibus, si statim ad nosseris concipere.”

³ Sanchez, de matrimonio, Lugdun. Batav., 1669.

disease of the testes can rarely be given, since it is impossible to know to what an extent the true glandular structure is affected. The physician will probably be compelled to judge from the same facts which are equally open to others. In addition, however, to the diseases arising from inflammation and morbid growths which are the most common, the testis is liable to become atrophied, from various causes. Thus large, double herniæ are said to have produced impotence by pressure, and the same is asserted of hydrocele. One or both testes may be attacked in the course of *cynanche parotidæa*, or mumps, and waste away in consequence. Atrophy of the testicle, and impotence, may sometimes be produced by mechanical injury to the spine, or to the occiput. Both Larrey and Hennen mention cases in which, from blows with a sabre upon the occipital protuberance, impotence resulted. Dr. Fisher,¹ of Boston, had a case in which the loss of virile power was only temporary, after an injury of a similar character. Larrey states that many of the soldiers in the French expedition to Egypt became impotent from atrophy of the testes, which he ascribed to the use of date-brandy sophisticated with *solanum capsicum* or *pseudo capsicum*.

§ 206. In some cases, the inability to procreate arises from some defect in the copulative organ.

(4). *Defect in size and malformation of the penis.*—The general rule may be laid down, that, if the organ be of sufficient size to be introduced within the entrance of the vagina, fecundation may be the result. Hence, except the penis be congenitally absent, or have been removed close to the pubis, the person is not necessarily incapable. In case of hypospadias or epispadias, *i. e.*, where the orifice of the urethra is either below or above the organ, at some point of its length, the individual may become a father, if the orifice can be brought within the female parts. Cases proving this fact satisfactorily are reported by Foderé, Belloc, Kopp, and others;² in some of which instances the malformation was transmitted to the children. A very interesting case of this nature is reported by Traxel.³ An unmarried woman, at her confinement, deposed that for three years she had not cohabited with a man, but only with a female whose

¹ Am. Journ. Med. Sci., vol. xxiii.

² Beck's Med. Jur., vol. i.

³ Prager Vierteljahrs., 1856, 4tes Bd. Anal., p. 103.

sexual organs bore some resemblance to those of the male. On examination, this person was found to present the following peculiarities: A scrotum was divided in the middle, and on either side contained a testicle. Between its two halves there was a fissure lined with a mucous membrane, and presenting at its upper angle and below the penis the orifice of the urethra. The penis was short, thick and imperforate, and along its under surface, in the natural position of the urethra, was a deep furrow extending from its root to its extremity. The new-born child presented the same malformation precisely. In this case it is evident that during coition the open urethral furrow was transformed into a canal by the apposition of the vaginal membrane, and conveyed the semen to the uterus. The person hitherto regarded as a woman was judicially ordered to assume man's clothing, provide for the support of the child, and declared capable of contracting marriage. This defect is also in some cases curable by an operation. Examples of bifid penis,¹ and cases in which this organ had an unnatural attachment to the abdomen² and to the scrotum,³ are to be regarded rather as medical curiosities, than as likely to give rise to practical difficulty in legal relations. The same may be said of an excessive size of the penis.

§ 207. (5) *Obstruction from large hydroceles, or herniae.*—This is sometimes an effectual hindrance to copulation, if voluminous. A case is related where a man of fifty-one years of age, who had been affected with a scrotal hernia for nine years, was nevertheless able to beget children, since, in the horizontal position, the tumor became a third smaller, and allowed the protrusion of the penis.⁴ An interesting case is related in Henke's *Zeitschrift*, in which the paternity of a child was attributed by the mother to a married man of sixty years of age. It was represented, in his defence, that he was affected with a double scrotal hernia of ten years' standing, which rendered the sexual act impossible, since the penis was almost entirely concealed by the immense tumor, measuring in circumference $18\frac{3}{4}$ inches.

¹ Ephem. Nat. Curios. Dec. 1, Ann. 1, Obs. 110, Dec. 3, Obs. 77; Sixtus D. de diffusione genitalium, singulari penis bifidi observatione illustrat; Kopp. Jahrbuch, vii. p. 386. The preparation is in the Anatomical Cabinet in Würzburg.

² Schurig, Spermatologie, p. 134.

³ Cheselden's Anatomy, p. 314; Brand. Ed. Encycloped. Art. Hermaphrodites.

⁴ Pyl's Aufsätze, Sammlung viii. s. 204.

A very careful examination and report was made by the official surgeons; they declared that this state of the parts did not hinder the act of coition, since the tumor was of such a yielding nature as to allow, by proper manipulation, of the sufficient protrusion of the organ.¹

§ 208. (6) *Local relaxation.*—Constitutional causes often impair the sexual power, not only by rendering the seminal secretion inactive, but by destroying the ability to copulate. Excessive abuse of venery, and the vice of masturbation, are the most frequent causes of that local relaxation which often constitutes an insuperable obstacle to sexual intercourse. If impotence be ever caused by the use of colchicum, nitre, camphor, dulcamara, and other drugs, as is alleged, the defect will be, most probably, only of a temporary nature.

§ 209. (7) *Psychical causes.*—These are, in some cases, hardly explicable by the individual himself. Cases are on record in which, notwithstanding the existence of proper sexual feelings on the part of the husband, he has been unable to accomplish that part of the act which is essential to impregnation. Devergie relates a case of this kind.² Another one is given by Dr. Strecker.³ In both cases, the husbands had the sensation and the knowledge of emission with other women. In one of these cases, this circumstance was attributable to indifference on the part of the female. Generally, where relative impotence exists, it will depend, in the absence of physical causes, upon some prejudice or passion. Excessive sexual desire will sometimes defeat its own end; and, on the other hand, too great timidity, or disgust and aversion, may prove causes of impotence. We need hardly add, that they are often but temporary in their nature.

§ 210. (8) *Want of age.*⁴—The seminal secretion is established at the age of puberty, which is about the fifteenth year in temperate climates, and ceases at no determinate period. The establishment of this secretion is marked by familiar changes, both local and general. The genital organs become developed, hair appears upon the pubes and under the axillæ, the beard becomes apparent, the voice more grave, and the muscular system developed. Curious instances have

¹ Band 44, s. 379.

² Méd. Légale, Nullité de Mariage.

³ Henke's Zeitschrift, 1840, 1 H. p. 223.

⁴ On the civil disabilities of infants, see Whart. on Contracts, §§ 29 *et seq.*; on their criminal responsibility, see Whart. Crim. Law, 8th ed., §§ 47 *et seq.*

been reported, in which there has been unusual sexual precocity. The most astonishing of these is one related by Professor Stone, of Washington.¹ The child was only *four* years old; he was four feet and a quarter of an inch in height, and weighed nearly seventy pounds. His bones and muscles were developed in an extraordinary degree, his voice was grave, and the pubes was covered with a luxuriant growth of hair. The penis measured, in a semi-flaccid state, four and a quarter inches in length, and when perfectly flaccid three and a half inches. The prepuce was short, leaving exposed a perfectly formed glans penis. The papillæ of the corona glandis were salient, and exquisitely sensitive. In the scrotum were two firm, apparently well-developed testicles, perhaps rather under the average size of those organs in the adult. The spermatic cords were distinct, and, under the finger, gave the impression of perfect organs. His father having observed "during the night, when he had slept with him for the first time, a constant erection of the penis, accompanied by a nickering, like an excited stallion," consulted Dr. Stone concerning him. The boy was said to be extremely fond of embracing the opposite sex, and on one occasion, when in bed with a near relative, a married lady, the latter was aroused by finding him closely clasped to her back, and her night-dress saturated with a glutinous material—very different from what she expected, as she supposed he had emptied his bladder upon her. The reporter had no opportunity of examining the secretion with the microscope.

Dr. Rüttel observed a case in which a girl of fourteen became pregnant by a boy of the same age.

Mr. Ruelle, of Cambria, has recorded an example of precocious virility. A child three and a half years of age, muscular and strong as one of eight, had all his male organs of the full adult size, with long black hair on the pubes, and, under excitement, discharged semen four or five times daily. He had also a full male voice, and dark short hair on the cheek and upper lip.²

§ 211. Old age is usually attended with impotence, but there is no fixed period at which, either medically or legally, a man must cease to be capable of begetting children. Mr. Curling has found the spermatozoa in the semen of men at sixty, seventy, and even eighty-seven

¹ Am. Journ. of Med. Sci., Oct. 1852.

² Brit. and For. Med. Rev., Jan. 1844, p. 277.

years of age, and Casper in a man of sixty-nine. Parr is said to have become a father at the age of 140 years; and quite a sufficient number of instances are known, to determine the fact of the occasional retention of virility much beyond the age of sixty years. The preservation of this faculty coincides with a vigor and haleness of constitution which is the lot of but few aged men.

Curling has shown¹ that there may be perfect virility without the presence of spermatozoa, in which case, of course, the ability to propagate is absent; and Mr. C. thinks that, where this condition is known to exist, it presents a bar to marriage, but is insufficient ground for a divorce.

Delpech says,² that workmen engaged in making red toy balloons, in which process sulphide of carbon is extensively used, at first pass through a stage of excitement with intensified sexual desires, but finally lose all such inclination; it is even stated that the testicles of boys engaged in this work never develop, and that analogous effects are produced in women, who eventually become sterile after passing through a period of venereal excitement.

These statements would certainly seem to require further and confirmatory observations before a judicial decision could be based upon them.

It should also be borne in mind that a single microscopic examination is not sufficient, as Casper has shown that spermatozoa may be absent at one time and present at another.

CHAPTER III.

RAPE.³

§ 212. MEDICAL evidence in cases of rape is seriously affected by circumstances over which the physician can have no control. One of the most important of these is the want of an examination at a *sufficiently early period* to afford useful results. In genuine cases,

¹ Lancet, vol. ii. 1863, p. 11.

² Ann. d'Hygiène, Jan. 1863, p. 65.

³ On the legal relations of rape, see §§ 593 *et seq.*

where rape has been really attempted, the local marks of violence are often extremely insignificant, and consequently soon disappear. A slight contusion of the genitals, a laceration of the hymen, or a trifling discharge of blood, are the sole indications of the transaction, and may, within forty-eight hours, be no longer present. Hence, it is seldom possible for the medical examiner to make any useful note of "the marks of violence upon the person, the disorder of the clothing," etc., which are usually prescribed by authors. The dress has been smoothed or changed, the marks of injury have disappeared, and all that remains is perhaps a suspicious stain upon a chemise, *alleged* to have been worn at the time of the assault. It is stated by a celebrated author, who has had much experience in such cases (Casper), that in fifty-eight cases which he had been required to examine, the time that had elapsed from the alleged commission of the rape varied from three weeks to one year. In connection with the injuries above alluded to, the victim of rape, particularly if young and a virgin, often manifests by her manner of walking, *i. e.* by keeping the limbs separated, that she suffers pain in the genitals. She is also apt to complain of pain in passing her urine or in going to stool. These signs are naturally most conspicuous immediately after the act of violence, and, apart from aggravating causes, may be expected to decline from day to day.

§ 213. 1st. *Rape upon children.*—We propose in the present article to refer a good deal to the experience of Casper, believing that the subject will be more profitably illustrated by authentic cases, than by theoretical discussions. There is no subject upon which it is more necessary for the physician to be guarded in his opinion that this, since he may designedly be entrapped into an admission entirely at variance with his real view of the case.¹

Thus—a tradesman of irreproachable character was accused by a woman of having violated her daughter, who was but eleven years of age, and of having communicated to her a gonorrhœa. The child was of a very scrofulous constitution. The labia majora was separated and flaccid, the clitoris unusually developed, the entrance of the vagina inflamed, and painful to the touch, and the hymen obviously stretched. There was also a copious urethral discharge. The opinion given by Dr. Casper was, that a complete penetration had not taken place, but efforts by the male organ, affected with gonorrhœa, had

¹ See *infra*, §§ 593 *et seq.*

been made to effect it. The further progress of the case showed the truth of this opinion but not of the accusation, for the defendant was found perfectly free from disease, and the cross-examination developed the fact, that the mother, after having fruitlessly endeavored to extort money from the tradesman, had delivered the child to her own paramour, a journeyman living in the same house, whom she knew to be affected with gonorrhœa. She then threatened to denounce the tradesman, unless he gave her money.

§ 214. In thirteen cases of alleged rape on children from two and a half years to fourteen, he found, upon examination, nothing whatever to support the accusation, as the sexual parts were in a perfectly natural condition. Yet many of these cases had been previously examined by physicians, and were provided with certificates attesting various degrees of injury. In two cases the accused parties were also said to exhibit unmistakable traces of the previous existence of chancres. Dr. Casper ascertained that the children were wholly uninjured, and that the presumed venereal cicatrices were perfectly natural appearances.

§ 215. It is also important to know, that it is by no means easy to ascertain the condition of the hymen, especially in children, who present a majority of the cases. There are two reasons for this. 1st. Where the outrage has been really committed, the tender parts of the child become so sensitive, in consequence of their inflamed and swollen condition, that they will not bear the slightest touch, much less a separation of the labia; the child becomes so uncontrollable, that it is often necessary to give up entirely the examination without attaining the desired end, and this repeatedly, if the physician happen to be inexperienced, or unless an anæsthetic is administered.

§ 216. The second reason is based upon the variety of structure presented by the hymen. It is not always crescentic, but frequently is attached all round to the vagina, having a circular hole in the centre. This free edge is sometimes swollen and loose, and is then particularly deceptive. It varies a great deal in thickness and firmness. Its place of insertion also varies, it being sometimes attached near the entrance of the vagina, and at others so far back that it is found with difficulty, especially under the circumstances before referred to. "For these reasons," says Casper, "the cases are explicable, which I have so frequently met with, where a previous medical or

surgical examiner had certified that the hymen was absent, when I myself have afterwards found it entire and uninjured."¹

In order to have a clear understanding of medical evidence in cases of rape, the subject may properly be considered under the divisions of, 1st. *Rape upon Children*. 2d. *Rape upon Adults*. We here refer, however, only to the outrage upon persons of the female sex; the crime in a contrary sense will be considered hereafter.

§ 217. 1st. The *frequency* of attempted rape upon children has been lately shown by Casper. Of one hundred and eleven cases which he had examined up to the close of 1856, seventy-eight were children under twelve years of age, and seventeen between the ages of twelve and fourteen. It is probable that very nearly the same proportion might be observed in other places if proper statistical inquiry were made. This frequency may be accounted for by the comparative ease with which a child's resistance may be overcome, and by its entire ignorance of the nature and consequence of the sexual act. We may also mention here, that the author above quoted refers it, as well as the superadded disgrace and misery of venereal infection, to the prevalent superstition among the lower classes in his country, that connection with a pure virgin will cure a person affected with this disease, and hence, for the sake of certainty, the youngest children are chosen as victims of this revolting crime.² Casper found syphilitic gonorrhœa in thirteen girls from five to fourteen years of age. One of them, aged only five years, had moreover venereal warts, and in a child of three years of age he found a primary chancre.

§ 218. The traces left after an attempt at sexual connection by an adult with a girl under the age of puberty vary somewhat with the *age*, but more still with the degree of violence and the frequency of its

¹ Casper, loc. cit.

² The supposition exists in other countries. Mr. Wilde, of Dublin (Med. Times and Gaz. Sept. 10, 1853), says: "A delusion prevails very extensively among the lower orders in Ireland, to the effect that a man can get rid of an obstinate gonorrhœa, which has 'foiled the doctors,' by having connection with a virgin, and, as the easiest mode of effecting that object, a child of tender years is selected." He states also that he had been informed by Dr. Montgomery that he knew a case in which a servant woman, affected with gonorrhœa, induced a child to have connection with her, in the hope of thus curing herself. From the work of Duchesne on the prostitution of Algiers, we learn that "the Arabs believe that the syphilis may be transmitted to a negro female, the individual thus transmitting it becoming free from the disease."

repetition. A full and complete connection between an adult male and a child under twelve years of age is, on the first attempt, manifestly impossible; repeated efforts, however, will produce such a dilatation of the parts as to render it finally practicable. A case, where the vagina of a child seven years of age became by degrees sufficiently dilated to admit the adult male organ completely, is mentioned in Canstatt's *Jahresbericht* for 1851. But in the majority of cases the penetration is but partial, and in some cases the chief injury has been inflicted by the use of the finger. The truth of this statement is shown by the frequently uninjured condition of the hymen. In fifty-one cases of rape upon children, many of them under fourteen, complicated with syphilis, Casper found the hymen destroyed only seven times in those between nine and fourteen years, and twice slightly torn in children of nine and ten years of age. In all the remaining cases, viz., *four-fifths of the whole number*, *it was entirely uninjured*.

§ 219. The usual *marks of violence* left after the attempt upon children are a swollen condition of the labia majora, together with an inflamed and painful state of the vaginal entrance, and a secretion from these parts of a muco-purulent discharge. There is also pain in urination and defecation.

This condition may be illustrated by a case where a child ten years of age was assaulted by a man aged thirty-eight; the following signs were found immediately afterwards. The nymphæ swollen, of a dark red color, and very painful, the hymen torn into three parts, the vaginal entrance free, but of a deep red color as far as the attachment of the hymen. The child was feverish and had pain in and after urination. Spots of blood were found on the under-garment. In the course of a week the hymen was healed, but not united, the swelling subsided, but there remained a muco-purulent discharge for about two weeks.¹ A yet fuller illustration is presented by the case of a child under seven years of age ravished by an adult. It is reported by Dr. McKinlay.² At the upper part of the cleft of the buttocks, behind and above the anus, the skin was besmeared with dried blood. The

¹ Keller. Casper's *Vierteljahrsschrift*. V. Band. 1 H. 1854.

² Br. and For. Med.-Chir. Rev., Oct. 1859, p. 535. A very similar case, which ended fatally, is reported by Mr. Colles, *Med. Times and Gaz.*, June 1860, p. 560.

vagina was lacerated in various directions. One laceration extended down to the verge of the anus, laying bare the rectum, and others upwards and laterally. In the cavity produced by the laceration was some fecal matter which had escaped from the rectum through an opening an inch in length, and situated three-quarters of an inch from the verge of the anus. The child gradually recovered, in spite of these frightful injuries.

If gonorrhœa or syphilis have been communicated, there may be, in addition to these marks of injury, an urethral discharge, chancres, condylomata, and if sufficient time have elapsed, buboes and constitutional symptoms. We subjoin here a few cases, showing the appearances we may expect to find in children upon whom rape has been attempted.

§ 220. X., a man of leisure, was accused of having repeatedly misused three sisters, Agnes, aged 12, Clara 11, and Antonia, 8. In all three the hymen was destroyed; in the two elder, the vaginal canal was uncommonly widened for their age, but not in the youngest. The opinion given was, therefore, that all three of the children had been deflowered, but that it was probable that the youngest had been masturbated with the finger. The evidence of the children, and some witnesses, gave all the details of this filthy transaction. Several more cases of an exactly similar character are given; we will, therefore, not repeat them. In the following case the whole proceeding was seen. Ottilia, aged ten years, still retained her hymen, although this was inflamed and relaxed. The vaginal entrance was dilated, irritated and very sensitive. An old man of not less than sixty-five years had, it was said, often abused the child, having first enticed her by the present of a silver penny. On the last occasion, when he was discovered, the act took place in a barn, and a witness observed it through the chinks of the wall. The opinion of Dr. Casper, founded merely upon the condition of the child, was that a complete penetration had not taken place. A journeyman baker, affected with gonorrhœa, was accused of rape upon a child seven years of age, of healthy constitution. The child, examined one month afterwards, was found to have the hymen uninjured, but had gonorrhœa, and the mucous membrane of the vaginal entrance in an inflamed condition. Hence the opinion was given that the condition of the child was due to an *attempted*, but not completed, coition by a man affected with gonorrhœa. Eight other similar cases are given. Another instruc-

tive case is the following: The girl was fourteen years of age. The labia majora were relaxed and inelastic, and did not cover the vaginal entrance as they do in the virgin state. The orifice of the vagina was dilated, particularly in the lower portion. The opening of the hymen, which was itself not destroyed, was unusually large, and the vaginal mucous membrane very red and inflamed. The hymen and clitoris were swollen, and there was also gonorrhœa. The defendant, a bookbinder, who was charged with having frequently had connection with the young girl, as well as others who visited his shop to buy writing materials, represented that he had merely used manipulations with his hand. Dr. Casper, in reply to the question put by the judge, stated that "it was improbable that the defendant had merely manipulated with the hand, since the dilation of the vagina was adverse to this opinion, and that masturbation merely could not induce so much inflammation, nor the urethral gonorrhœa which was present. Hence it was to be presumed that the defendant had at least *endeavored* to introduce his organ into the vagina." A case happened in London in 1858, and is related by Dr. Taylor,¹ of a girl of seven years, violated by a boy under seventeen years of age. There was complete destruction of the hymen, and slight laceration of the perineum, but no other marks of violence. Very profuse bleeding had saturated the girl's clothing, but no trace of blood was found on the boy's clothes or person; and it was inferred, therefore, that the bleeding was an after effect, and a result of oozing from small blood-vessels. Had not the proof of the crime been complete on other grounds, this circumstance would have rendered its commission by the accused improbable. Hascher² relates a sickening case of a child eight months of age, violated by a boy eighteen years old. Upon examination there were found redness, swelling and great tenderness of the labia minora and parts in the neighborhood of the urethra, with rupture of the hymen, frænum, and perineum, together with laceration of the posterior wall of the vagina.

§ 221. A case of genuine rape, with syphilitic infection, gave rise to an indictment against a journeyman hatter, who had abused his master's daughter in the most shameful manner. "The girl was only eight years of age, her private parts were very much dilated,

¹ Med. Jurisp., 6th ed. p. 697.

² Oest. Zeitsch., xxxii. 33.

and the mucous membrane, particularly at the entrance, very red and painful to the touch. The hymen was destroyed, and she had a virulent gonorrhœa." Dr. Casper gave his opinion, "that there was no room for doubt that an impure coition had taken place, and been really consummated." It was afterwards discovered that the accused was affected with gonorrhœa. But on account of his obstinate denial of the charge, and his endeavor to escape conviction by assigning other reasons for the infection, the judge proposed the question, if the common use of an *unclean chamber utensil* could possibly be the means of conveying the gonorrhœal disease. The answer was, that this was possible, but that such an origin of the disease could not properly be assumed in this case, on account of the destruction of the hymen, and the dilatation of the vaginal canal.

§ 222. There can be no doubt of the occasional transmission of gonorrhœa by other means than sexual intercourse; but it is important for the physician to keep in mind the fact, that, *in the case of children* at least, the presumption is entirely in favor of the ordinary mode of infection, unless the signs of violence before enumerated do not exist. Dr. Ryan,¹ nevertheless, examined two children who were infected with gonorrhœa by using a sponge belonging to a servant girl who had the disease. Mr. Hamilton² has published a case, in which a girl of six years of age was infected with syphilis by a boy of nineteen. The contagious matter was carried by the fingers. In Henke's *Zeitschrift* for 1850,³ the details of a judicial examination of a somewhat similar case, where also the virus was conveyed by the finger, are given by Dr. Henrich, of Mayence.

§ 223. *Leucorrhœa* and gangrenous inflammation of the vulva are diseases which often arise *spontaneously* in young children, especially of the poorer class, and are due to bad diet, uncleanliness, scrofulous taint, and epidemic influences. In the minds of anxious relatives they may awaken suspicions of violence with intent to commit rape, and sometimes form the occasion for criminal prosecutions against innocent persons, for the sake of gain.

Leucorrhœa may be easily mistaken for gonorrhœa, for the discharge in the two diseases is nearly similar, and the local symptoms are so much alike as to render a positive opinion, in legal cases,

¹ Lond. Med. Gaz., vol. xlvii. p. 744.

² Dublin Med. Press, vol. xx. No. 511, 1848.

³ Erg. Heft 41.

rather hazardous. And yet, it is apparent, that the truth of the accusation may depend upon the determination of this difference alone. A case in point is furnished by Capuron.¹ A little girl had a whitish and very acrid discharge from the vulva; the labia majora and mons veneris were red, swollen, and painful; there were several ulcers, with a secretion like that from the vagina. The parents regarded the affection as syphilitic, and believed that their child had been deflowered; but Capuron recognised the symptoms as belonging to a catarrhal affection which then prevailed in Paris, and by means of an appropriate regimen speedily effected a cure.

§ 224. According to Churchill,² "The commencement of the disease (infantile leucorrhœa) is marked by local uneasiness, itching, and scalding on making water; the mucous membrane is found inflamed and swollen, but for some time there is no discharge. * * At a more advanced stage there is observed a thin, colorless, mucous discharge, which slowly becomes more copious, thicker, and of a white or yellowish color. It is often of an acrid character, and causes a circle of inflammation, and sometimes of excoriation of the skin at the margin of the vulva. If the labia be separated, the mucous membrane will be found more vascular, and of a deeper color than usual; but in very few cases does this extend up the vagina. * * Under ordinary circumstances the disease is neither very tedious nor very obstinate, and after running a certain course, it terminates in resolution."

§ 225. This description, with the exception of the last sentence, would answer equally well for gonorrhœa, the only reliable point of difference being the obstinacy and indefinite course of the latter.

In the case before referred to in Hencke's *Zeitschrift*,³ the virulent character of the discharge from the private parts was settled by the unmistakable gonorrhœal ophthalmia which the child brought on by touching her eyes with her soiled fingers. As the existence of gonorrhœa in a child, in the vast majority of cases, presupposes a criminal attempt, the proof of the former is merged in the proof of rape.

§ 226. Where, however, there is found *leucorrhœa*, i. e., a simple

¹ Briand, *Méd. Lég.*, 6ème éd. p. 77.

² *Dis. of Females*, p. 35.

³ *Erg. H.*, No. 41.

mucous vaginal discharge, without any signs of violence, such as contusions, lacerations, dilatation of the orifice of the vagina, or injury of the adjoining parts, it may still be doubtful whether these marks of violence have not existed *previously* and disappeared, or whether it has had a spontaneous origin. This is a question which can only be answered from a knowledge of the time elapsed since the alleged injury. Where it results from mechanical violence, the discharge is at first mixed with blood, owing to the laceration and distention of the parts, and afterwards changes its character, becoming thick and yellow or thin and albuminous, according to the degree of inflammation and the influence of treatment, but is not as copious as where the disease is of spontaneous origin. But the leucorrhœa of children is *never bloody*, and, of course, no marks of mechanical distention or of laceration will be found at any period of the disease. In conclusion, it may be remarked that the leucorrhœa of children is quite a rare affection, so much so that no mention is made of it by some of the best authorities.

§ 227. Mr. Kesteven, of London, in the *Medical Gazette* for February 28th 1851, has recorded a case and attached thereto some practical and useful observations, from which the following is an extract. With reference to the physical indications of chastity, the medical opinion upon which, he says, may be divided into two classes, the public and private, the former, or the most frequent, “are those in which vaginal discharges in young children are mistaken by the parents or friends for the evidences of sexual intercourse by elder male persons having gonorrhœa or syphilis. Such cases have frequently occurred to myself, as they have to others; and, although now better understood by the profession than formerly, yet so strong is often the notion entertained by the public with regard to these cases, that it is not unfrequently extremely difficult to persuade parents that we have merely to deal with the results of ordinary disease, and not with those of violence. This notion, in several cases that have come under my notice, has unfortunately been *confirmed by hasty and erroneous opinions*, given by surgeons on the mere representation of the friends, without a proper examination having been made. *It is scarcely possible to speak too severely of such culpable and wilful ignorance.* Within the last few weeks, a child of nine years of age was brought to me, upon whom it was suspected that violence had been inflicted. A careful examination afforded evidence that the case was simply one

of vaginitis. There was complete absence of any indication of violence, for, although it can scarcely be believed to be possible that sexual entrance into the vagina of an infant could, under any circumstances, be perpetrated, yet in the *attempt* much contusion of the young and delicate soft parts *must have ensued*, had it been made. The parents were satisfied, and an individual unjustly suspected was forthwith released from so odious an imputation."

§ 228. "This disease," says Mr. Wilde, "although denominated, by Churchill and other modern writers upon the diseases of children, *leuchorrhœa infantilis*, is better designated by the term *vaginitis*, for it is of a much more inflammatory character than either leuchorrhœa or gonorrhœa—at least, as these two diseases present themselves in the adult female; and the discharge is much more profuse in the former, and much more purulent in the latter. This discharge proceeds principally from the vagina, although the external parts are generally bathed with it when we come to examine them, in the same way as the surface of the glands and the inside of the prepuce are usually covered with discharge in persons laboring under gonorrhœa, particularly where the foreskin is abundant. The redness and swelling of the labia, clitoris, and orifice of the vagina, are generally very great, and the hue of the former is somewhat purplish. Not being acquainted with the appearance of gonorrhœa in children under ten years of age, I cannot say whether the inflammatory symptoms are equal in appearance to those now described. The disease is, I believe, usually painless in the first instance; and it is only when excoriation has taken place from the irritation of the discharge, and that the urine passing over the abraded surface produces some degree of soreness, that any complaint is made. After some time, the period varying according to the virulence of the disease, and the state of cleanliness or the contrary in which the child is kept, the discharge excoriates the labia both on their external and internal surfaces, the fourchette, perineum, the margin of the anus, and all that portion of the integument of the thighs washed by the discharge, or which come in contact when moved one upon another. In fat children, the amount and extent of excoriation, which presents much the character of an eczematous eruption, is always greater than in those who are thin, or have been in any way wasted by previous ill health. The extent of this eruption is generally very well marked by a defined eczematous margin, extending from the pudendum, in a crescentic form, over the thighs, and

sometimes into the cleft of the nates. The character of this eruption, its *defined margin and extent*, may possibly, to a practised and unprejudiced eye, serve to distinguish this disease from the results either of violence or the mechanical irritation produced by the ‘friction of the penis’ between the thighs and external labia, as was endeavored to be proved by the crown in the late trials in Green Street. With respect to the discharge, it is generally of a very acrid nature, and is the cause of the excoriation and eruption upon the true skin; and, unless the disease has been discovered by accident in an earlier stage (such as by observation of the child’s linen, or by the chance of some second party seeing the child), the two circumstances which first attract attention are, the difficulty of walking, or the pain in making water; but the date of the discovery varies from a few days to several weeks, according to the violence of the affection, or the care and attention bestowed by the mothers on their children. For the same reasons, the duration of the disease will vary from a fortnight to six weeks or two months. The age at which this vaginitis is most frequent is from four to ten, but it may appear earlier.”

§ 229. The following notice of the disease is taken from a paper by Mr. Wilde, of Dublin, in the *Medical Times and Gazette*, September, 1853. This paper is entitled a “History of the recent Epidemic of Infantile Leucorrhœa, with an Account of Five Cases of alleged Felonious Assaults recently tried in Dublin.” He says: “Considerable excitement has prevailed among all classes in Dublin during the last month, owing to the circumstance of no less than three cases of felonious assaults upon children under ten years of age having been brought forward by the crown at the late commission before the Chief Justices. * * * So impressed were those members of the profession in Dublin who were acquainted with the circumstances of the cases, that Professors Cusack, Beatty and Geoghegan, and Drs. Churchill, Hughes, Hatchell, and Speedy all came forward in court, gratuitously, to tender their evidence in what they considered the cause of truth, science and humanity. Most practical physicians and surgeons, particularly those attached to public institutions, or who are well acquainted with the diseases of the lower classes, know perfectly well that vaginal discharges, attended with inflammation of the external parts and an eczematous excoriation of the labia and the adjacent portion of the thighs, are not uncommon affections in girls aged from four or five to ten years.” Mr. Wilde gives some curious

and instructive details of the manner in which the charge of rape is got up in some of these cases. We will give one as a specimen. "The first one of these cases was that of Margaret Walsh, a child aged nine and a half years, in whom the disease presented a very virulent form when it was discovered by her stepmother, who, however, acknowledged that she had remarked her *walking lame for several weeks before*. There was considerable swelling and inflammation of the parts, and a most profuse purulent discharge. Upon the discovery of the disease by the stepmother, she at once accused the child of impropriety, and demanded the name of the person who had diseased her. Upon the child's denying all knowledge of such, she was forthwith 'soundly flogged,' and repetitions of the punishment promised until she confessed. It came out at the investigation that the mother took down the cross from the mantel-piece, and threatened her therewith—a very impressive mode of adjuration among the lower order of Irish. The neighboring women interfered, and by threats and promises endeavored to extort an acknowledgment, but without effect. Names of different persons were then suggested, but still the child said she could not remember any of them having offended her. Finally, an elder sister, who was present during one of these scenes of torture, reminded the child of an old pensioner named Barber (who resided in a distant part of the city, but who was formerly a neighbor of hers) having giving her a bit of sugar some months before, when they lived in his neighborhood. This she acknowledged, and then arose the accusation." The man was arrested, committed for trial, and sent to prison. The child stated that the prisoner took her into the open hall of a house adjoining his own, and entered into a detail of the transaction, which it is not necessary to quote. The medical evidence showed that the prisoner was not in any way diseased. "After a few words from Chief Justice Monahan, the jury at once acquitted the prisoner, who was discharged, with, however, that suspicion against his character which, among persons of his own class, is not easily eradicated, while the unhappy child was stigmatized as a young prostitute, who had acquired gonorrhœa when little more than nine years of age!"¹

¹ The following testimony by Mr. Cusack in one of Mr. Wilde's cases will further establish this point: "I examined the two children (Cosgrave, the prosecutrix, and Delmere); both were affected with the same complaint. They were filthy, and had a discharge from the pudendum. There was a crust sur-

§ 230. The gangrenous inflammation of the vulva, to which we have referred as giving rise to suspicion of rape, is a still rarer disease than leucorrhœa. It is due, generally, to some unknown epidemic influence, or occurs as the sequel of certain prostrating diseases—as measles, or scarlet and typhus fever. Velpeau says it commences with a grayish, red or blackish vesicle, which ulcerates and then sinks below the level of the surrounding tissues, which assume a

rounding the parts upon the true skin, which arose from the deposits from the discharge. This child had not the slightest mark of violence; and it was simply a case of a disease which all medical men have met with, and which is very common among children who are strumous, or badly cared for, or who have been in contact with each other. It is usually found in low life, but sometimes it is found in the better walks of life, where children have suffered from other complaints tending to weaken the constitution; and, I confess. I was horror-stricken at the time to hear that the prisoner at the bar was accused of such a crime. I was as convinced as I am of my existence that there was no violence offered or attempted upon this child, and that this was a common disease which is universally known to the profession. I conversed with Sir Astley Cooper on this very subject and I entirely concur with what appears in his lectures, that numbers have suffered unjustly from such charges as the present, being fabricated by the mothers of children.' "This evidence," says Mr. Wilde, "which was given in a very decided and energetic manner, seemed to produce a considerable sensation in court; on which the Lord Chief Justice and the crown counsel cross-examined the witness to a considerable extent, in order to show that, although there were no marks of violence, 'a penetration between the labia, accompanied with force, but not sufficient to do any injury to the surface,' might have occurred. In answer to this mode of putting the question, the witness said; 'If the penis was brought into contact with the parts, and a discharge ensued in consequence, it would certainly be a species of violence; but in the present case there was nothing to show me that any friction had taken place externally, or that any attempt had been made to do anything wrong. I am confident that the discharge was not, in any respect, the consequence of friction from the penis of any man. If there is violence, it would cause pain; but I could find not a trace of violence upon this child.' One would have thought that this evidence might have induced the crown to give up the case; but the lawyers only took it up the more determinedly, and, seeing that disease from natural causes was established, changed their hand and endeavored to prove, by the subsequent witness, that, acknowledging the child was in the diseased state described at the time the crime was committed, still penetration between the labia, without what might be styled violence, but as a simple application of the parts, might have taken place—as the Chief Justice described it, the introduction of the parts, without force, and even to the 'hundredth part of an inch.' " Notwithstanding the explicitness of the medical testimony in this case, the defendant got off only by proving an *alibi*.

dusky red color. The mortification gradually extends on every side, and the labia become covered with a sanious and fetid discharge. The whole constitution suffers terribly, and without the prompt use of energetic remedies many children would perish. Mr. Kinder Wood, in 1825,¹ saw twelve cases of this disease, of which only two recovered. It is peculiar to children. We think that too much importance may be attached to it as rendering really difficult the question of rape. In all the cases of rape on children we have met with, we do not find one which presented any appearance which could be for a moment mistaken for this affection. The discrimination should not embarrass the physician, although the parents or relatives of the child may be so far misled as to attribute the disease to criminal violence.

§ 231. Cases have arisen, however, in which both physicians and jurists found the distinction difficult, yet more from the circumstances of the patient suggesting the suspicion of violence than from the characters of the disease itself. The earliest case is one often quoted from Percival.² "A girl four years of age was admitted to the Manchester Infirmary, on account of a mortification in the female organs, attended with great soreness and general depression of strength. She had been in bed with a boy, and there was reason to suspect that he had taken criminal liberties with her. The mortification increased, and the child died. The boy, therefore, was apprehended, and tried at the Lancaster Assizes, but was acquitted on sufficient evidence that several instances of a similar disease had appeared near the same period of time, in which there was no possibility of injury or guilt."

§ 232. The following more recent case presents very close analogies with the one just cited. In December 1857, Amos Greenwood, aged twenty-two years, was tried at Liverpool for the murder of Mary Johnson, ten years of age. On a Thursday night the prisoner and deceased occupied the same bed in a room with other members of the family with which they resided, and then and there it was charged that the crime had been committed. The other inmates of the room heard no noise, and the girl made no complaint of suffering for three entire days, when her genitals were found to be sore and her thighs excoriated. On the fourth day she was seen by a surgeon, who pronounced her affection vaginitis. Becoming rapidly worse, her friends

¹ Medico-Chirurgical Transactions, vol. vii. p. 84.

² Medical Ethics, 1803, p. 103.

urged her to confess a criminal cause for her ailment, but she protested that she had nothing to divulge, until, being threatened that unless she did so she should be left to die, she declared that "her bed-fellow had been upon her, and hurt her very much." Mercury was then administered to her by an unlicensed practitioner, when sloughing and mortification set in, and proceeded with great rapidity. A surgeon next saw the patient, and discontinued the use of the mercury. The mortification extended, however, to the pubes and nates, including the urethra, labia and vagina to the depth of two inches, and the child died thirteen days after the alleged attempted intercourse, and ten days from the first discovery that she was diseased. Greenwood was then arrested, and found to have venereal warts on his penis, and syphilitic sores beneath the prepuce. He was tried, convicted of manslaughter, and sentenced to penal servitude for life.

In this case the only direct testimony implicating the prisoner was that of the girl, from whom it was extorted by threats, after she had repeatedly denied that he had had anything to do with her.¹ Evidently, if copulation was attempted, it must have been so without violence, and without the infliction of pain, for the occupants of the adjoining bed heard no noise, and for three days afterwards the girl made no complaint, nor was her appearance observed to be different from usual. Her subsequent condition cannot, therefore, be attributed to an attempted violation. Is it with more probability attributable to a syphilitic infection derived from the prisoner? The existence of syphilitic sores beneath his prepuce would render his attempting coition improbable. But, admitting that they might have been insufficient to restrain his lust, is the existence of a syphilitic infection proved by an examination of the child's genital organs? These were first seen by a medical man upon the fourth day, who deposed that the girl had vaginitis, with ulcerated spots all over, from the size of a pea downwards. These sores had no resemblance in number or appearance to syphilitic ulcers, but, on the contrary, presented all the characters of aphthæ. The state of the parts certainly did not suggest to the

¹ "Frequently," says Casper, "have I heard very young but quick-witted children reveal, with the most perfect unconstraint, or even impudence, the whole course of the alleged affair and all its details in disgusting minuteness, so that it required but little penetration to perceive that they were merely rehearsing a lesson which had been taught them; and it has seldom happened that the facts of the case did not confirm this belief."

medical man in attendance either that the child had syphilis, or that she was the victim of an attempted rape. It was not until an unlicensed practitioner had administered mercury injudiciously that the symptoms which ended fatally were developed. Since, therefore, neither the nature nor the fatal issue of the child's disease could be distinctly traced to the prisoner, even on the supposition that there had been contact between the genital organs of the latter and those of the child, his conviction of manslaughter would seem to have been unjust. The person really guilty of the child's death was undoubtedly the unlicensed practitioner who gave her mercury without judgment, immediately after which the fatal symptoms began to be developed.¹

§ 233. 2d. *Rape upon adult females.*²—The question of the possibility of rape on an adult female is one that presents considerable difficulty. The testimony of the female herself is naturally open to suspicion, since the cases of false accusations of rape are by no means rare. The majority of writers on medical jurisprudence maintain that when there is no disproportion between the age and strength of the parties, and the woman is awake, well, and conscious, a rape cannot be accomplished unless through threats against her life. It must be remembered, however, that there are few circumstances in which a woman can be placed where, from confusion, surprise, and terror, she is sooner deprived of the command of her will and the power of resistance. We believe that no general rule should govern our opinion on this question, but that it ought to be decided in each case according to the correspondence of the injury received with the woman's narrative and her character for modesty and veracity.

We subjoin the following case because it seems to disprove the accuracy of the general opinion, and bears strong internal evidence of credibility. On the 22d of March, 1849, a girl, twenty years of age, unmarried, and of virtuous character, returning home from an errand to a neighboring village, was met in the pathway through a wood by a young soldier, twenty-two years of age, with whom she had previously a slight acquaintance. He asked her to let him accompany her a little way on her road, to which she consented.

¹ For the details of this case, and the discussion to which it gave rise, the reader is referred to Wilde, Dublin Quart. Journ., Feb. 1859, p. 51, and Med. Times and Gaz., May 1859, pp. 518, 544; Kesteven, *ibid.*, April, 1859, pp. 361, 417, 442.

See *infra*, §§ 573 *et seq.*

After having gone a short distance, the soldier proposed to her to go with him into the bushes. He made an effort to force her, but did not succeed. He kept his arm around her body, however, and, seizing a favorable opportunity, suddenly raised her from the ground, and, with one hand confining her arms behind her back, threw her down, and with the other pulling up her clothes, prepared to effect his purpose. Upon her beseeching him to let her hands free, he did so, when she again made repeated efforts to get loose from him. He succeeded, however, in again securing her hands, and now lay with all his weight upon her, and endeavored with his knees to separate her limbs, but, with a last effort, she freed her hands and seized him by the privates. She would not let go until he promised to desist. He did so; when, as she attempted to rise, he caught her by the leg, and, throwing her back, finally succeeded by perseverance in securing her hands and separating her limbs, after which he fully accomplished his purpose. All this was done without blows or any unnecessary violence. A witness who passed by after it was over, testified that he heard them quarrelling together, that the girl was crying, and the young man endeavoring to smooth her disordered dress. Upon her return home, she informed her mother, with many tears, of what had happened, upon which her father insisted upon her going to the parish priest, who lived about a mile distant, which journey she accomplished, though not without considerable pain and difficulty. Medical examination was had three days after the occurrence. The traces of a recently ruptured hymen were found, but other marks of violence were very trifling. There were no spots of blood upon her linen, but some traces bearing a resemblance to seminal spots were found. It further appeared that she was strong and healthy, and, it having been suggested to her that she had probably lost her breath in ascending the hill, and hence had been easily overpowered, she said no, she had entirely recovered her breath. The place was examined which she had indicated as the scene of the outrage, and evident marks of a struggle were found. The woman's statement was entirely unaffected by the cross-examination, while the prisoner contradicted himself repeatedly during the trial. He was sentenced to five years' imprisonment.¹

§ 234. The following very analogous case is reported by Casper,²

¹ Henke's Zeitschrift, Erg. Heft 41, pp. 21-44.

² Gericht. Med., ii. 157.

who pronounces it one of the most instructive he had ever met with, because it appears to show that a strong, healthy, and fully grown maiden may be violated by a single man. On the 16th of January the accused enticed the girl, who was twenty-five years of age, into the park near Berlin, and, having vainly endeavored, owing to her struggles, to accomplish his purpose by forcing her against a tree, he seized her by the body and threw her upon the ground, where, being deprived, as she alleged, of all power of resistance, he flung her clothes over her head, and consummated his purposè. Nine days afterwards Casper examined her. She was modest and maidenly in her behavior, and, without any affectation, appeared to be very sad on account of her misfortune. The orifice of the vagina was found to be inflamed, and painful when touched or dilated, the hymen was entirely lacerated, and the swollen caruncles were very red. The fourchette was uninjured. Without any prompting, and only after some general questions in regard to her condition and feelings, she stated that for the last few days she had suffered less than at first in passing water and in going to stool. From these facts it was concluded that the woman had been ravished. At the trial it appeared in evidence that the policeman, who had been attracted by cries to the spot, found the ground frozen hard, and that the accused, even after his arrest, was in a state of satyriasis. He was condemned to four years' imprisonment.

§ 239: Although rape is a crime usually attempted without accomplices, this is not always the case. Dr. Taylor¹ refers to two instances of the sort. In both, the females were married women. In one it appears, that while an accomplice held the head of the female, with her face downwards, between his thighs, the prisoner had forcible intercourse with the woman from behind, her limbs having been first widely separated. In the second case an accomplice held the woman down on a bed by the neck, while the prisoner separated her thighs, and thus had intercourse with her. She was examined nine hours afterwards by an experienced surgeon, and he found no mark or trace of violence or injury on or anywhere near her pudendum. There were bruises on her arms, neck and legs, where she had been forcibly held down.

§ 240. In an elaborate study of rape contained in the *New York*

¹ Medical Jurisprudence, 6th ed., p. 708.

Medical Journal, November 1865, Dr. H. G. Storer, cites the Bates case, which occurred in Boston, where a strumpet was forcibly violated by four men in succession against or without her consent. The defendants were convicted on the evidence of an eye-witness, and sentenced to five years' imprisonment.

In the same able and philosophic essay, which is worthy of careful perusal by all interested in the subject, Dr. Storer contends that the punishment was disproportionate to the offence. The following points are made: 1. Rape is carnal knowledge without or against consent. 2. On the ground of the presumed innocence of the prisoner, the consent of the woman should always be assumed. 3. The position taken of late years, that the extent of penetration does not modify the nature of the offence, is regarded as unfair and contrary to common sense. Dr. S. also claims, what Casper so strenuously contends for, that each case should stand alone, and not be submitted to an all-including statute. It is laid down as a very general rule that complete entrance cannot be effected without manual assistance, and that the hands of the ravisher, if ravisher he be, are fully occupied in overcoming the resistance of the woman. This rule, it will be noticed, is at variance with the two cases just quoted. The four medical presumptions of intercourse are stated to be, (*a*) marks of violence on the genitals, or (*b*) other parts of the person of one or both parties, (*c*) spermatic or blood stains on one or both, and (*d*) the presence of a venereal disease. In considering the first two classes we must carefully satisfy ourselves if the injuries are old or recent, and whether their occurrence can be otherwise accounted for. Seminal stains on the clothes of the prisoner may have resulted from intercourse with another woman, or have had their origin in an erotic dream; while if found upon the clothes or person of the woman, it may equally be the result of another coition—even if found within the vagina, semen does not furnish certain evidence of completed rape, as the struggles of the woman may have caused the spermatic jet to take place at some distance, and the secretion in that case have only fallen within the ostium vaginalis. Of both spermatic and blood stains it may be safely said, that the weight of their evidence is much greater if found upon both parties. If, however, blood stains are found upon the genitals of a man who is suffering from neither piles nor haematuria, in the absence of an evident wound, the presumption is very strong that they were occasioned by carnal intercourse.

Finally, where the existence of a venereal disease is cited in proof of rape, it is important to establish the facts that the same form of disease exists in both parties, that it had not existed in the woman or child before the alleged crime, and that it made its appearance at such a time after the assault as to establish a connection as cause and effect. Dr. Storer says this period is from two to twelve days; we think that, in a case of true chancre, it should be extended to at least three weeks.

Emanating, as these dicta do, from so high an authority as that of the distinguished Boston professor, they are entitled to every consideration, and should be carefully borne in mind by the medical expert whose judgment is sought in these cases.

§ 241. Where a woman has been wrought into a state of *unconsciousness by intoxicating liquors* or by narcotic drugs, and when she is prevented by these means from making resistance, there can be no doubt that her chastity can be violated. The cases are quite numerous which attest this.¹

§ 242. The question whether a *deep natural sleep* can render the female unaware of the sexual act is more difficult to decide. There are certainly some persons whose sleep is always exceedingly heavy, and who cannot be awakened by loud noise—such as thunder—by strong light, or by being rudely shaken. Long watching and fatigue, and heating drinks, are often followed by very profound sleep. It is not difficult to suppose that, in some rare instances, females, whose slumber may have been rendered unusually heavy from any of these causes, may be unconscious of sexual connection taking place at the time; and it must even be admitted that it may occasionally happen to virgins. Two cases illustrating this point are related by Montgomery,² the one borrowed from Gooch and the other communicated by Mr. Cusack. In both cases the females were unmarried, and regarded as virtuous, and both declared solemnly that they had no knowledge of the cause of their pregnancy. In each case the father of the child born confessed that he had had connection with the female, who was plunged in a deep sleep produced by excessive fatigue. Nor should such a statement be deemed incredible, when we remember that there are instances, quoted elsewhere, of children

¹ See *infra*, §§ 543 *et seq.*, for legal relations of rape.

² Signs of Pregnancy, p. 362.

born without the mother's consciousness, and that instances of a complete absence of sexual sensibility in the female are not uncommon. If, moreover, the act be perpetrated under the cover of darkness, upon a woman who has fallen asleep while awaiting her husband or lover, a certain degree of belief must be given to such an explanation. Yet, while allowing all due weight to these exceptional cases, their occurrence should not be lightly assumed, the presumption being certainly against it.¹ In the words of Valentin, “*non omnes dormiunt, qui clausos et conniventem habent oculos!*” A case has been subjected to judicial examination, in which a girl, eighteen years of age, declared herself pregnant by a professor of “animal magnetism.” The state of insensibility called magnetic sleep, or hypnotism, is frequently marked by a total want of perception of impressions, such as usually occasion pain; and such was alleged to be the case in the instance referred to.² The opinion that the imputed crime is possible was expressed by the experts who were consulted, and was confirmed by that of Dévérge.

§ 243. The proof of unconscious sexual connection is usually derived from the occurrence of pregnancy without a knowledge of its origin. We subjoin a few examples. Klein³ reports a case where a stepfather violated and impregnated his daughter, of the age of eighteen, during her sleep. Zittman⁴ relates the case of a girl who was impregnated during her sleep, and was only conscious of having had an oppressive dream. Alberti⁵ mentions the fact of a girl having been violated and rendered pregnant while in a state of stupor from a potion prepared from the seeds of *datura stramonium* (James-town weed). Osiander⁶ relates that a young girl, only fifteen years of age, having fainted with terror at the sight of some drunken soldiers, was shamefully misused by them, and left bleeding and in an almost dying condition; she, however, recovered, but had got the venereal disease, and become pregnant. Klose⁷ met with the case of a clergyman, who, while watching by the corpse of a young girl, gratified his lust upon her. Her death, however, was but a temporary

¹ See *infra*, §§ 593 *et seq.*

² Abeille Méd., xv. 293.

³ Kopp's Jahrb. der St. Arzneikunde, 10 Jahrg.

⁴ Med. Forens. Cent., v. Cas. 21.

⁵ Syst. Jurisprud. Méd., tom. ii. p. 200. See *ante*, § 201.

⁶ Handb. der Geburtsh., § 286.

⁷ System der gerichtl. Physik, § 286.

suspension of animation, for she awoke and was pregnant.¹ It should, of course, be remembered that the truth of the statement relative to the commencement of the pregnancy is open to examination.

§ 244. Rape may be committed with comparative ease upon women *advanced in life*. Casper² relates a case in which a woman sixty-eight years of age, decrepit and horribly pitted with the small-pox, was violated by a young fellow of twenty-seven.

§ 245. 3d. *Rape upon persons under the influence of ether or chloroform.*—A trial in this city has developed the importance of the question, how far the capacity of resistance on the part of the female, and her consciousness of the act, is abolished by the intoxicating and narcotic influence of ether and chloroform.³

From the novelty and importance of the questions to which it has given rise, we have concluded to give here a full account of the history of the case, chiefly extracted from Dr. Hartshorne's vindication, and, in the note, some remarks of our own on the "physical effects of ether inhalation," both of which are published in the Phil. Med. Exam. for December 1854.

"A young lady of unimpeachable character, who has for some time been engaged to be married, is accompanied by her betrothed to the house of an eminent and highly respectable dentist, who had engaged to plug one of her teeth. They arrive about ten o'clock on a Friday morning. She enters the house, and after 'a few minutes' spent in awaiting the exit of two other ladies, she is ushered into the operating room or office. Here we will allow her to continue the narration in her own words.

"I went into the office; took off my bonnet, and Dr. B—— went to the washstand to wash his hands, and he asked me after the family; I took a seat on the operating chair; in a few minutes Dr. B—— told me one of the men wanted to speak to him,

¹ See also Rüttel, Henke's Zeitschrift, 1844, 264; Henke's Handbuch; Zeitschrift, 37 Bd. p. 290; Hartman, Canstatt's Jahresbericht für 1851, Bd. vii. p. 84. In this last case the woman could not only not be convinced of the existence of pregnancy, but was even unaware of the nature of her labor until she saw the child. See also Capuron, Méd. Lég., pp. 57, 84; Fodéré, Méd. Lég., tom. i. 497; Dict. de Méd., tom. xxi. pp. 358-9, also tom. x. p. 465; Dévergie, Méd. Lég., tom. i. p. 431; Gooch, Compend. of Midwifery, pp. 81, 82; Montgomery, Signs of Pregnancy, 2d ed., p. 360.

² Loc. cit., p. 26.

³ See *infra*, 594

and he gave me a book to read and left the room; did not say what man; I supposed there were men there; he has a room in which the teeth are made; I believe those to be the men; Dr. B——'s family were out of town at that time; he said so, and the door was opened, and there was no furniture in the front room; I don't know how long Dr. B—— was absent; when he came back I was sitting in the operating chair; he went to the instrument case, and began with my tooth; the tooth was on the left side; he commenced operating on the tooth before he gave me ether; the operation was very painful; he said he would either put something in to destroy the nerve or give me ether, leaving the choice to me; I told him I'd prefer taking ether; I didn't learn what he proposed putting into the tooth; he gave me the ether on a small napkin, folded up; I felt very dizzy at first; I was cold and felt very numb; it increased upon me; I did not lose my consciousness of what was doing; I continued to breathe the ether; my eyes were closed; I closed them voluntarily; I did not try to open them for sometime after; after he gave me the ether, he did not, as I remember, operate on my tooth; he felt my pulse several times; put his hand on my arm under my sleeve, up my arm; I had a loose sleeve; he did it once; he put his hand on my breast under my dress; on the bosom; he put his hand on my person, under my dress; I have a distant memory of that; I was not able to make any resistance or outcry; he went round before me and raised my clothes; I am perfectly distinct in my memory of that; I did not try to cry out; do not know if I was able; after he had raised my clothes, my feet were crossed, and he raised them and put one on each side of the stool; he then put his arm around me under my clothes; he drew me down to the edge of the chair; I do not know what he did after that till I felt pain; he did enter my person; it was then that I felt the pain; I was not able to cry out or resist; I did not try; I don't know what was his position; my eyes were closed; I have no doubt that he did enter my person, and did give me pain; all this time I was conscious of everything that was going on; after this he left me and crossed the room to the washstand; I heard him pour out water into the basin; after he had been to the washstand and returned, I opened my eyes, and saw my clothes up; he did not see me; I have a clear recollection of seeing my clothes up; I closed my eyes immediately; he put down my clothes,

and in a few minutes he was at the side of the chair, and lifted me up into the seat; I was just to the edge of the seat; it was a large dentist chair; in a few minutes he told me he'd have to take the tooth out; that was the first remark he made, except the first, when he asked me if I was getting sleepy; at the time he entered my person I did not feel his person against me; pain I distinctly felt; when he spoke about taking out the tooth, I asked him why; he said they were both decayed, and he could not save them both; I told him I was afraid it would pain me, and he said he would not let it; he then gave me more ether, and extracted the tooth; it was on the left side; when he extracted the tooth it was painful; I screamed then; he then assisted me to rise, and led me to the rocking-chair; I felt a little dizzy when he led me to the rocking-chair; he then went out of the room, and in a few minutes came up with a lady; I have not seen her since; he asked me if I would be introduced to her; I believe I said no; he did not introduce me then; I heard him tell the lady he'd always been our dentist, and that we never had been to any other; he said my teeth were very good; he said I had taken ether when the tooth was extracted; I think she said something about hearing me scream; he said yes, ether had not much effect on me, I was either nervous or for some cause; in a little while I got up, and he introduced me to the lady; I think it was Mrs. P——; I made several remarks, but I don't know what they were; I then put on my bonnet, and Dr. B—— followed me down stairs; the lady was left up stairs; he came to the door, and I wanted to stop an omnibus; he asked me how far I was going, and I told him to Third street and Lombard; he told me I had better walk; he said he thought that I had some of the ether in me, and the walking would do me good; I walked down Walnut to Sixth, and did not get into an omnibus; I did not reproach Dr. B—— at the house; I was afraid; I stopped in C——'s ice cream saloon, at Sixth below Prune; I got ice cream; I went then along Sixth street to Spruce, and down to Third and Lombard street; I was going to see a young woman that sent for me; I did see her; don't recollect how long I was there; when I left I came up to Mr. T——'s, at Chestnut street, near Fifth; I was very intimate with Mr. and Mrs. T——; I met Mr. M—— on the way up, near Sixth and Chestnut street; he joined me and spoke to me; did not accompany me to Mr. T——'s; did not meet any but those I have named; I reached Mrs. T——'s

at one o'clock ; they had not been to dinner ; I first mentioned to Mrs. T——what had occurred at Dr. B——'s, the same day after tea ; that afternoon I was taken unwell ; it was the usual time ; the door of the dentistry room at Dr. B——'s was shut ; there are two doors in the room ; the one leading to the entry door was closed ; Dr. B—— said that he closed the door because the smell of ether would go over the house ; the door was shut before he gave me the ether ; the chair is one that leans backwards.

§ 246. “*Cross-examined.*—Dr. B—— was the dentist of our family ; don't remember the number of years ; it was from the time of my early youth ; he attended all the members of the family so far as they required it ; I went to him with the approval of my parents ; he generally behaved like a gentleman ; I did not know his family ; don't know how many years I have been his patient ; when I called with Miss Thr—— it was to get my tooth plugged ; on several times before I had taken ether ; I requested it to be given ; I don't remember of his persuading me from it ; the tooth was not plugged when I was there with Miss Thr—— ; the following Thursday was appointed for future operation ; I did not go on Thursday ; Mr. Thr—— had the appointment made ; I believe it was on Wednesday morning ; I received a letter from him to that effect ; I requested him to go in with me ; he was there when the woman came to the door ; I was shown into the front parlor ; it was the usual place ; it was but a few minutes before the ladies came down ; Mr. B—— came down before ; he said he had several young ladies up stairs and would be down in a few minutes ; I went into the usual operating room up stairs ; the door opening into the front room was opened at the time ; it was the back room of the main building I was in ; the workshop is in the second story back building ; don't know how far from the room in which I was ; it is not upon the same level ; it is lower ; I don't know if I could see into the windows of the workshop from the window of the room in which I sat ; when Mr. B—— went to see the workmen he gave me one of the monthly magazines ; while I was in the room nobody came to the door that I saw or heard ; don't know of the doctor leaving that room ; did not see any women there except Mrs. P—— and the Misses H—— ; the windows were closed in the room, *i. e.*, the sashes were down ; no change was made in their condition while I was there ; don't remember any one calling as a sitter while I was there, and Dr. B——'s speaking of it ; I did not know of Mrs.

P——'s being in that house before she was brought up stairs; I don't remember speaking to Dr. B—— of the fan and requesting him to give me ether; from the time I closed my eyes after the ether had been taken, I did not open them until after the liberties had been taken; I did not open my eyes until he returned from the washstand; what I have described is from what I have heard and did not see; I did not see any part of his person exposed, nor the application of any part of his person to me; don't know, except from the pain, what part of his person was applied to me; he passed his hand up my arm immediately after he had felt my pulse; after the ether was administered a second time no liberties were taken; I judge that he did not see me when I opened my eyes, because he was not in front of me; when he told me he would have to pull the tooth, I asked him why; the reason why I agreed to take the ether a second time was, because I was afraid; I was not afraid to have my tooth taken out, or to be operated upon further; I don't know if either of my teeth were prepared for plugging; I suppose he touched the tooth he took out; that gave me pain; I told him I'd had the toothache; another appointment was made for Monday at two o'clock; I asked him when I was to come again to have them finished, and he said at that time; I asked him that when I was going and had my things on; he booked it at my instance; I don't know if it was before Mrs. P—— came in or not; Dr. B—— did not say there was a sitter waiting for the chair; I did not see any one call to inform him of a sitter; I never notice such small things as that; don't know how long after he had finished the tooth that he went down for Mrs. P——; I did not remain more than five minutes; Mrs. P—— said she came from the country and came to have her teeth attended to; Dr. B—— followed me down stairs; that is his custom, not only with me but with other ladies; when at the door I did not manifest any displeasure with him; I told the doctor I wanted an omnibus; I believe I bid him good-bye; soon after I got out of the door of the second story, I told him to say good-bye to Mrs. P—— for me, as I had forgotten it; the chair I sat in was the one I had always used; there was but one operating chair in the room; Dr. B—— asked me if I ever rode on horseback; I said yes, sometimes; he said, ride over and see us; I replied, perhaps I will; that was up stairs; on the way down to C——'s I did not meet any one I knew; I did not meet any one on my way to Third and Lombard Street; I told Dr. B—— I was going on an errand to

Third and Lombard Streets; it was an errand for my sister in respect to some articles of dress; I did not speak to her of the treatment I received; did not sit down very long; when I left Dr. B——'s I think it was a few minutes before or after twelve o'clock; I don't remember which; I don't know how long I was at C——'s; not long; reached Mrs. T——'s a little after one o'clock; Mr. McK——, whom I met, asked after the family; I did not tell him where I had been; he only walked with me a short distance; I did not complain of any pain to Dr. B——, except the pain of my teeth; I don't remember how long the first application of the ether lasted; after I took it I felt no pain in my teeth; cannot describe the effect of the ether, except that it made me dizzy; I did not see the doctor at all during the operation of the first ether; I felt his breath as well as felt pain; the pain did not continue long; I had no other indication of the approach of my monthly discharge but that day; it occurred in the evening; I did not examine my person in the interval; nobody examined it between those times; I did not examine my garments; my mother did on Sunday afternoon; nobody before; those garments don't remain now as they did then; they are washed; I don't know when; I made the communication to Mrs. T—— after tea on Friday evening; I told Mrs. T—— before I became unwell; I gave evidence before the Mayor; don't know if the garment was washed before that; it was not washed till I went out home; during the time I was at Mrs. T——'s till I was taken unwell, no physician was sent for; I was never examined by a physician; on the afternoon of Friday I was out riding with Mr. and Mrs. T——; we set out about six; I do not know where we went; somewhere on the plank road; it was some time after I returned that I felt unwell; spoke to Mrs. T—— on the subject after tea; we had tea as soon as we came home from riding; Mrs. T—— told Mr. T——, and Mr. Thr—— asked me a single question about it; I answered it; and that was all I said; it was before I felt unwell that I told Mr. Thr—— about it; he remained as long as I did, and went to my grandmother's with me; on the next day I went out to the depot, but did not go to my father's; Mr. Thr—— accompanied me to the depot; I met Mr. and Mrs. T—— out there; I did not see my father or mother; I saw my father on Monday morning in Fifth Street; at the time he left to go down stairs, I did not see if he opened the door or not; I was sitting with my back to the door; I don't know why I refused to be introduced

to the lady when he first asked me the question; my father and Mr. Thr—— accompanied me to the Mayor; Mr. and Mrs. T—— and my two uncles were there; my father was there before I was.

§ 247. "*Re-examined.*"—I said that Dr. B—— generally used me like a gentleman; he said a year ago that he should like me for his second wife; he had a good many children, but they should not trouble me, as he would get nurses for them; I spoke of it at home to my mother and sisters; after the doctor took me out of the chair after the operation, all that I said was in answer to questions by him, or to remarks; the reason why I did make another appointment with him (Dr. B——) was that I did not want him to know that I knew anything of his conduct; I had not concluded what course to pursue."

We leave the comments upon the legal proof of penetration or of rape in this case to our colleague; the question as to the capability of evidence on the part of a female, relative to what has occurred during the period of etherization, and the possibility of resistance under such circumstances, may, we hope, receive an answer in the subjoined remarks.¹

¹ There is a striking analogy between the effects of ether and those of alcohol; the chief difference between them being in the more rapid and complete insensibility produced by the former, and in the more evanescent character of the intoxication. There is a period of excitement, of stupor, and of recovery, and the phenomena observed in different individuals vary according to their temperament and habits. In general, the state of excitement in etherized patients is short, and verges rapidly into that of unconsciousness and insensibility to pain. The vapors of ether seem literally to ascend and diffuse themselves through the brain, and to permeate every portion of the body; the patient has a sense of fulness and warmth; the whole body feels lighter and seems to spurn the earth; the sense of hearing becomes confused, the sight dim, and the touch benumbed. External objects lose themselves in a confused mist, which appears to swell their proportions and contort their shape; the muscles become relaxed, and the patient sinks lethargic and unconscious into a profound sleep.

During the transition into a stage of entire insensibility, he responds to external impressions only in an automatic manner; the most painful incisions, if felt at all, seem to him like the marking out of lines upon the skin, and the extraction of deep-seated tumors like the crackling of hair between the fingers. All his movements are instinctive; an expression of suffering is often depicted upon the face; the hands are raised against the operator as he attempts to draw a tooth, and, when spoken to, he answers in a vague and dreamy manner. The recovery from this condition, or from a more advanced stage, is apparently

§ 248. Finally, although a woman may be of age and strength sufficient for effectual resistance, she may be naturally so simple-

sudden, but, as in the waking from profound natural sleep, the perceptions are for a few moments confused, even while the person thinks himself fully awake and appears to be so.

Dr. Forbes has well described the *psychical* state under the influence of ether. "Generally speaking," he says, "the sense of external impressions becomes at first confused, then dull, then false, with optical spectra or auditory illusions, general mental confusion, and then a state of dreaming or utter oblivion. In the majority of cases, the mind is busy in dreaming, the dreams being generally of an active kind, often agreeable, sometimes the reverse, occasionally most singular, and frequently a great deal is transacted in the few short moments of this singular trance. Many of the patients who have undergone the most dreadful operations, such as amputation of one or both thighs or arms, extraction of stone, excision of bones, extirpation of the mamma, have readily detailed to us, and most with wondering thankfulness, the dreams with which, and with which alone, they were occupied during the operations. The character of the dreams seemed to be influenced, as in ordinary cases, by various causes, immediate or remote, present or past, relating to events or flowing from temperament." * * * * * "A good many seemed to fancy themselves on the railway, amid its whirl and noise and smoke; some young men were hunting, others riding on coaches; the boys were happy at their sports, in the open field or the filthy lane; the worn Londoner was in his old haunts carousing with his fellows; and our merry friend, Paddy, of the London Hospital, was again at his fair, wielding his shilela in defence of his friends. Others of milder mood, and especially some of the women patients from the country, felt themselves suddenly transformed from the great city and crowded hospital-ward, to their old quiet home in the distant village, happy once more with their mothers and brothers and sisters. As with the dying gladiator of the poet, the thoughts of these poor people—

" Were with their heart, and that was far away."

Some seemed transported to a less definite, but still happy region, which they vaguely indicated by saying they were in heaven; while others had still odder and warmer visions which need not be particularized." (Brit. and For. Med. Chir. Review, April 1843.) It is with this psychical condition that we now have chiefly to do.

What then is the influence of the inhalation of ether upon the *perceptions*? It undoubtedly cuts off, more or less quickly, the life of relation, and severs us from the external world. The lapse into unconsciousness is gradual but rapid, and does not admit of division into distinct intervals. The sensation of pain is often lost before outward consciousness has become totally obscured. Indeed, instances are related in which the patient has himself looked on as a calm spectator of the painless mutilation of his body. A patient of Prof. Pitha, being put under the influence of chloroform, at once fancied himself in his beloved

minded, or so ignorant of the nature and consequences of the sexual act, as to offer the greatest facilities to any one who may have the

Italy, and gave full vent to his expressions of delight; he raised himself up during the operation for the liberation of a hernia, and watched it with great interest—answering to the question whether he felt any pain, *Si, io sento l'incisione, ma non sento dolori.*" (Prager Vierteljahrschrift, 1848, 3 Bd.) Such cases are rare, and it is important that we should not be misled by this apparent outward consciousness. In the instance just cited, the perception was by no means unperverted; since, although the patient replied correctly when questioned, he imagined himself in a distant country. During an extremely painful operation performed by Velpeau upon a young girl, she raised herself into a sitting position as if to observe it. She said afterwards that she supposed herself seated at a dinner table. (Rev. Méd., 1847.) In the greater number of cases, however, the perceptions are greatly perverted—illusions being sometimes suggested by the scene actually passing, and at others arising without being prompted by the external perceptions. Some cases, illustrating this fact, we quote from the interesting work of Dr. Flagg. (Ether and Chloroform, etc., by J. F. B. Flagg, M.D., Surgeon Dentist, etc. Philadelphia: Lindsay & Blakiston, 1851.)

After an operation performed on the forehead of Mr. T——, a dentist of this city, he said, that although his eyes were shut, he saw every cut of the knife. "He saw the shape of the wound upon the forehead; and, what was better than all, this cutting appeared to him to be done upon somebody else." A lady dreamed that she was at Cape May, and was going into the surf, and that while in the water she was attacked by a shark, which held her fast, but without pain, until the company present extracted his teeth and liberated her. A little girl, the extraction of whose tooth made a report like the drawing of a cork, sprang out of the chair, "crouched upon the floor, and looked up anxiously at me and inquired if anybody was killed." She supposed she was travelling upon a locomotive engine, which had been blown up and thrown her into the air. A boy fancied himself in a cotton-mill; an Irish woman dreamed that she had been home, and seen her friends engaged in spinning; and others dreamed that they were in railway cars or shipwrecked: the dream in some cases being suggested intentionally by the dentist, or being due to accidental noises. A countless number of cases might be adduced to show that patients under the influence of ether have been completely ignorant of all that passed around them while in this condition, and have been surprised to find, upon their recovery, that they have undergone the most severe surgical operations. But this fact is too familiar to need illustration. It is only important to observe that during this state of utter oblivion the mind is often busily engaged upon its own inward perceptions, which may or may not be pertinent to the actual position of the patient. These perceptions shape themselves into dreams entirely similar to those of natural sleep, being grotesque and improbable, cheerful or painful, according to the temperament, occupation, and habitual mode of thought of the individual.

knavery to take advantage of her. A case in point may be found in the second edition of Wharton's Criminal Law, p. 439. Here a girl

One of the most extraordinary effects of the inhalation of ether is its effects upon the *emotions*. Thus some persons are seized with the most irrepressible mirth, while others seem to sink under the weight of despondency. Women are especially liable to these effects. Hysterical paroxysms are by no means a rare accompaniment of ether inhalation. In others the erotic propensities are strangely excited. Siebold relates the case of a woman whom he rendered insensible by ether. Upon regaining her consciousness she appeared to be in a highly excited state, and was loud in her praises of the delightful condition in which she had been ; her eyes sparkled, and a certain erotic excitation was very observable. (Ueber die Anwendung der Schwefel-Æther-Dämpfe in der Geburtshülfe, Göttingen, 1847.) Pitha observed excitement of the sexual feelings in two cases, one of a woman and the other of a man, upon whom he operated. (Prager Vierteljahrschrift, 1847, Bd. 3.) "In one of these cases, observed by M. Dubois, the woman drew an attendant towards her to kiss, as she was lapsing into insensibility, and this woman afterwards confessed to dreaming of coitus with her husband while she lay etherized. In ungravid women, rendered insensible for the performance of surgical operations, erotic gesticulations have occasionally been observed ; and in one case, in which enlarged nymphæ were removed, the woman went unconsciously through the movements attendant on the sexual orgasm, in the presence of numerous bystanders." (A Lecture on the Utility and Safety of the Inhalation of Ether in Obstetric Practice, by W. Tyler Smith, M. D., Lancet, March 27th, 1841 ; also in Bulletin de l'Académie, vol. xii., p. 406.) We doubt not that other cases might be brought forward to illustrate this fact, but the paucity of published reports of such a nature will be readily attributed to the natural unwillingness of patients to disclose painful illusions of this kind, and of physicians to make them known. In further illustration of the disordered condition of the mind under the influence of ether, the following case may be cited. A female rendered insensible by ether, after some unintelligible phrases, related some most circumstantial details of her private life. This involuntary confidence, which might have been followed by serious consequences had it taken place anywhere but in a hospital, was discovered afterwards to have been perfectly true. (Ann. Medico-Psycholog., vol. xii. p. 376.)

In the above observations it may very plainly be seen that the *will* no longer exercises its control over the mental operations. The thoughts run headlong upon their accustomed track, or in any direction in which they may have been impelled by fortuitous impressions made upon the nerves of general or special sensation. There is no power to restrain them, and, while the dream is a pleasant one, no desire to do so. Often, however, the illusions are painful or disagreeable, and in such cases the individual may make an effort to escape from or to repel them. Movements under these circumstances, therefore, imply an exercise of the will. This resistance is almost always to illusions proceeding from external impressions. We have already referred to the frequent occurrence

allowed a medical man to have connection with her, under the belief that this was medical treatment. Dr. Fleischmann¹ relates a case

of instinctive struggles against the hand of the operator, while the impression, as afterwards related, has been upon the mind of the patient that he was playing a part in some very different scene. Thus the little girl whose case is before referred to, and who fancied, when her tooth was drawn; that she was blown from a locomotive, *sprang* from her chair upon the floor while still unconscious.

Another young lady, mentioned by Dr. Flagg, when the forceps was placed upon the tooth, cried out, "Stop pulling! stop pulling!" The tooth was nevertheless extracted. "She *rose* from the chair in much excitement, and would have fallen to the floor, but I caught and sustained her for a moment, when the ether instantly passed off." This young lady dreamed that she was in danger of shipwreck, and, seeing the rocks and breakers ahead, cried out to the man at the wheel, with all her strength, to "stop pulling." In another instance, a lady, while under the influence of ether, resisted the attempt to extract her tooth. She *got* up from the chair, seeming much offended, and took her seat in another part of the room. When the effect of the ether passed off, which was in about a minute, she was much astonished at finding herself so remote from the position she occupied when she fell asleep. (Flagg, p. 102.)

The following singular instance may be appropriate in this place. A young man having been sufficiently etherized, the dentist prepared to extract a tooth. In a moment he dashed the instrument from his mouth, *left the chair*, and, striding about the room, demanded what they meant to do with him. In a few moments the effect of the ether passed off. Being again put under its influence, the same scene was enacted, with even greater violence, and he endeavored to jump out of the window. When he regained his memory, he related that he imagined himself surrounded by a great number of enemies, one of whom endeavored to drive a nail into his mouth, and, being unable to struggle with them, he had sought safety in flight. (Union Méd., Sept. 1857.)

M. Gerdy, in trying the effect of ether upon himself, with the object of observing closely its successive phenomena, found that, with the exception of the vibratory and benumbed sensation which rendered the sense of touch and of pain obtuse, and the noise in the ears which dulled the sense of hearing, his intelligence was clear, his attention active, and his *will* so firm that he willed to walk, and he did walk, in order to observe the effect upon his locomotion. He found that his step was only less sure than usual, and was similar to the gait of an intoxicated person. (Bulletin de l'Académie, vol. xii., p. 304.)

We have cited these examples, out of many of a similar nature, for the purpose of showing that the power of the will over muscular movement is not entirely abolished in etherization. It is true that the muscles are speedily relaxed but they are not paralyzed. The patient may exercise his will, or he may not;

¹ Henke's Zeitschrift, 1839, p. 294.

which occurred in his own practice. He was consulted by the parents concerning their daughter, a girl seventeen years of age. She had

if he does, it is to escape from danger, real or imaginary, but which has always to him the form of reality. If he does not make any movement, the fact is due either to the pleasurable or trivial character of his mental perceptions, or to the temporary but complete unconsciousness and insensibility in which he is plunged. That advanced stage of etherization in which perfect narcotism is produced is, in reference to the present question, of considerable importance : for, if the power of resistance is then lost, so also is the consciousness of a real motive for it. To be more explicit, if an outrage be perpetrated upon a woman lying wholly helpless and unconscious, she cannot be aware of the liberties which are being taken with her person, and will not, therefore, make any opposition to them. She cannot, moreover afterwards describe, with elaborate detail, the manner and particulars of the assault, and yet have been incapable of withdrawing from or repelling it. If her muscles and voice have been paralyzed, so also has her outward consciousness.

The recollection of what has passed during this stage of etherization is wholly confined to the inward mental perceptions—to dreams which have all vividness of real occurrences. In the language of Dr. Forbes, “the old story of the magician in the Arabian tales seems more than realized ; the ether being like the tub of water, one moment’s dip of the head into it produced a life-long vision in the dreamer’s mind.” It is possible that these dreams may be so vividly impressed upon the mind that they may have afterwards to the patient all the force of real occurrences, and that he may refuse to believe that they have been merely the disorderd perceptions of his own brain. In general, these dreams being of a trivial or of a pleasing character, it is not surprising that the patient should acquiesce in the belief of their unreal nature, but the case is very readily conceivable in which the hallucination may have been so distinct, and, at the same time, of so repulsive a character, as to leave an indelible impression upon the mind and a conviction of its reality. Authentic published evidence of this fact is indeed wanting, and we purposely forbear, for reasons which cannot fail to be apparent to our readers, to refer to that which was said to have been offered in the recent trial, as well as to that which we possess from private sources.

The following cautious remarks of M. Bayard are not without significance : “If,” he says, “in some cases, individuals have rendered an exact report of what has passed around them, or of the liberties which have been taken with them while under the influence of ether and chloroform, it must not be forgotten that very frequently they have dreams, hallucinations, and illusions which they relate with a conviction of their actual reality. Experts should therefore receive with extreme circumspection declarations made before them under these circumstances, and both in their written reports and verbal depositions, should endeavor to enlighten magistrates and jury upon the relative value and credibility of such revelations.” (*Appréciation Médico-légale de l’Action de l’Ether et du Chloroforme. Ann. d’Hygiène, vol. xiii., p. 201.*) It appears to us, from

been brought up in a very secluded manner, and was both weak-minded and wholly inexperienced. Her monthly periods were suppressed, and

what has now been stated, that the following positions may be assumed as correct :—

1st. That the consciousness or perception of external objects and impressions is impaired in the early and lost in the final stage of etherization.

2d. That during the time the mind remains susceptible to external impressions at all, these reach it in a feeble or perverted manner.

3d. That the emotions, and especially those of an erotic character, are excited by the inhalation of ether.

4th. That voluntary muscular movement is not paralyzed until the state of perfect narcotism is produced, at which time, however, all outward consciousness is extinct.

5th. That the memory of what has passed during the state of etherization is either of events wholly unreal, or of real occurrences perverted from their actual nature.

6th. That there is reason to believe that the impressions left by the dreams occasioned by ether may remain permanently fixed in the memory with all the vividness of real events.

[Since these remarks were written, there has been much evidence published, given at meetings of the dentists in New York and Baltimore, which fully confirms what has been now stated, and places the whole of the positions assumed by us beyond the possibility of a doubt as to their accuracy. We have only to add that the dentist, Dr. B., was found *guilty* by the jury, and sentenced by the judge to four years and six months imprisonment. We sincerely believe that a great wrong *may* here have been inflicted upon an innocent man, which can only be compensated by the probability that the fallible nature of the evidence upon which he was convicted will hereafter render it difficult to sustain an accusation upon similar proof.] To complete this history, it may be added that Dr. B., subsequently received a pardon from the Executive of the State, in consequence of the large mass of testimony, presented by physicians and dentists, going to prove the entire possibility that the whole accusation grew out of a hallucination such as ether is competent to produce. A case closely resembling that of Dr. B., in the text, occurred at Montreal in 1858. A dentist was indicted for attempting to commit a rape upon one of his patients under the influence of chloroform. At the trial, a witness testified that his wife was under the strongest impression that she had been violated by the prisoner while under the influence of chloroform; yet her husband was present during the whole time she was unconscious. The verdict of the jury was "guilty of an attempt to commit a rape, with a recommendation to mercy"! (Boston Med. and Surg. Journ., Nov. 1858, p. 287. For a similar case in Ohio, in 1860, see *post*, § 266.)

The medical editor of 1873 cannot refrain from adding a few comments upon this oft-cited case. The views expressed in previous editions of the very dangerous character of the precedent established by the decision in this case have been generally endorsed by the medical profession, and we hardly think a

a certain train of symptoms set in which awakened in his mind suspicions of pregnancy. The mother indignantly repelled this idea. He still, however, continued his attendance, and prescribed various remedies, without any avail. At last the violence of her pains compelled the girl to take to her bed. Here she lay for a short time in a half unconscious condition, but suddenly she gave a loud cry, threw aside the cover, and displayed, to the astonishment of all, a living child, just born, lying between her thighs. In answer to her mother's anxious inquiries, she declared, with the greatest candor and simplicity, that she had never slept with a man, and knew nothing more except that a long while before, her cousin N——, on a Sunday, when her parents were not at home, had played with her, and caressed her a great deal, and then, she said, “*er hat mir auf dem sofa recht schön gethan.*”¹

§ 249. 4th. *Physical evidences of rape.*²—Very little need be said of the *physical signs* of rape upon the adult female. Where the violence employed has been great, it will be found generally that it has been expended in overcoming the resistance of the woman before an actual penetration has been attempted. Hence, although bruises may be found upon the thighs and knees, and on other parts of the body, they are certainly inconclusive of rape, without some marks of injury can be found upon the private parts also. We of course refer only to the medical evidence, as it is plain that the fact of rape having been attempted may be established by other testimony. We have already alluded to the fact that a medical examination in cases of rape is seldom had early enough to secure any useful data; this is espe-

similar result would be again reached. The most grave defect in the chain of evidence presented by the prosecution was the absence of any examination to prove recent defloration of the plaintiff. The fact also that the complainant thought she had opened her eyes while in the anæsthetic state and immediately closed them, goes very far to prove that the whole occurrence was a delusion, as opening and closing the eyes requires a voluntary effort of which an etherized person would be incapable—and it is abundantly shown in the preceding note how common it is for patients under the influence of an anæsthetic to have vivid activity of brain present, while hardly ever is the dream similar to the real acts transpiring.

¹ We know of no equivalent English phrase by which to translate this remark.

² See *infra*, § 609.

cially vexatious in the case of adults, in whom, of course, the traces of sexual connection will soon disappear.

The only valuable indications are deduced from *the condition of the hymen and the traces of blood and semen.*

§ 250. (1) *Condition of the hymen.*—This comes under consideration only, of course, where the female is represented as having been a virgin. Indeed, the hymen is looked upon as the infallible sign of virginity. A brief mention of the various circumstances which affect its value as a test of virginity will show under what limitations evidence from it may be received.

§ 251. (a) *It is not always destroyed by the first connection.*¹—This is abundantly proved by the numerous instances in which it has been preserved entire until the occurrence of parturition; a fact which proves also that it is not an insuperable obstacle to impregnation.² The accoucheur has sometimes been obliged to incise it, in order to allow the delivery of the child; in some rare cases, on the other hand it has become gradually dilated and extended in such a manner as to permit the child to pass without its being ruptured. Maschka refers to the case of a girl, eighteen years of age, whose vagina was notably enlarged by coition, although the hymen was uninjured. This membrane was crescentic, thick and fleshy, but as elastic as India rubber.³

In Henke's *Zeitsch.*, vol. xl. p. 173, is related with detail a case in which, after four years' marriage, the hymen was found to be still uninjured, being thick and parchment-like, although yielding and presenting an opening about the size of a pea. The pair fulfilled their marital duties, imperfectly, of course, yet, nevertheless the lady became pregnant, and was confined prematurely in the sixth month. Dr. Montgomery says: "The existence of the hymen at the time of

¹ See *infra*, § 610.

² Canstatt's *Jahresbericht* für 1851. Credé, Bd. iv.; Kluge, *Med. Preuss. Vereinzeitschrift*, 1835, No. 22; Siebold—Siebold's *Journal*, Bd. xii. S. 210; Scanton, *Lancet*, Mar. 8, 1851; Schmittmüller, Henke's *Zeitsch.* Bd. xli. S. 172; Möller, *Ibid. Erg. Heft.* No. 32, 1843; Schildbach, *Ibid.* Bd. xl. p. 210; Ribke, Casper's *Wochenschrift*, 1835, No. 2, S. 16; Streeker, Henke's *Zeitschrift*, Bd. xxxix. S. 218; Himmer, *Neue Zeitsch. für Geburtshkunde*, Bd. iv. H. 1, S. 3; Montgomery, *Signs of Pregnancy*, etc., 2d ed., p. 366 *et seq.*, where numerous other references will be found. See also a recent case in Casper's *Vierteljahrsschrift*, 1855, p. 93.

³ Prager *Vierteljahrs.*, lxvi. 69.

labor has been observed by Ambrose Paré, Willis, Ruysch, Nægelé, Baudelocque, Mauriceau, and many others ; the cases related by the last two are particularly remarkable. Dr. Blundell met with four cases of impregnation in which the hymen remained unbroken ; the diameter of the vaginal orifice not exceeding that of the little finger ; and he knew of three other cases in which the male organ was not suffered to enter the vagina at all ; yet impregnation took place from the mere deposition of semen on the vulva."¹

Scanzoni relates a case² of a single woman aged twenty-nine, who was four months gone in pregnancy when she consulted him, in whom the hymen was placed four inches from the os uteri with an aperture in it only large enough to admit a probe, and was of so dense and unyielding a nature as to eventually require a crucial incision before delivery could be accomplished.

Mattei³ has also placed on record the case of a woman who had been married eleven years, in whom attempts at copulation had formed a *cul de sac* which admitted the finger to the extent of one and a half centimetres, and yet, though no aperture for the passage of semen was discoverable, pregnancy was far advanced. Labor came on at the regular time, and the dense soft structures yielded after three days.⁴

¹ Op. cit., p. 356.

² Allgm ; Wien Med. Zeit., 1864, No. 4.

³ L'Union Méd., No. 36.

⁴ It is impossible to glance over recent journals without being struck with the great number of cases of anomalous conditions of the hymen reported. We think it well in this connection to narrate a few of those which have met our eye. In the American Journal of the Medical Sciences, April, 1873, p. 560, two cases of pregnancy are given as reported in the Wiener Medizin Wochenschrift for Nov. 9th, 1873, by Dr. Karl Braun. One was that of a married woman aged 20 years, sent to Vienna to have the Cæsarian section done. Braun found a membrane extending from the rectum to the urethral orifice, which was divided, and labor took place naturally. The second case was one in which the opening into the hymen was only two lines in extent. Three cases of pregnancy with unruptured hymen are reported by the same observer. Am. Jour. Med. Sci., July, 1876, p. 282. In the Western Lancet, December, 1873, quoted in American Supplement to Obstetrical Journal of Great Britain and Ireland, 1874, p. 155, Dr. Cole records a case of pregnancy with unruptured hymen, in which delivery took place through the perineum, leaving the hymen still intact. Dr. St. Clair Gray, in the Glasgow Medical Journal, vol. v., No. 3, gives nine cases of persistent hymen, three of which were in prostitutes of 7, 8 and 11 years' experience, respectively. In the Philadelphia Medical Times

§ 252. (b) *It may be lost from other causes than coition.*—Without insisting upon the fact of its occasional congenital absence, which, although mentioned by Capuron, is probably, as a solitary defect, extremely rare, the hymen may be destroyed by accident or disease. Siebold¹ mentions a case in which this membrane was destroyed by an ignorant midwife, in examining a young lady for a supposed prolapsus of the womb. He also refers to a case related by Steinberger, where a young girl, who had climbed a tree to gather fruit, fell down in such a manner that a stake, planted underneath, penetrated the vagina an inch and a half deep, producing serious injury, and of course destroying the hymen. A case in which the hymen was lost in a somewhat similar manner, is related by Jörg. It is sometimes destroyed by ulceration, by the first eruption of the menses, and by self-abuse. From a consideration of these circumstances it follows, that, while the hymen is far from being good proof of chastity, it may be lost and the female still be pure. Perhaps the only exception to this remark will be found in cases where the traces of its destruction are recent. Here, of course, the presumption will be, that its laceration is due to sexual connection, unless other means are apparent. Where the female supposed to be violated does not deny having previously had carnal intercourse, the signs from the presence or absence of the hymen do not come under consideration.

The other traces of sexual intercourse, such as turgescence and bruising of the parts, with heat and moisture, may, where opportunity for an early examination is given, be of some weight when taken in connection with other evidence. An interesting case of *post-mortem examination*, in which these signs were of value, may be found in Henke's *Zeitschrift*, vol. xlvi. p. 41. The external genitals were found swollen and red, the clitoris in a state of partial erection, and

for Nov. 8th, 1873, Dr. E. Brown tells of a case in which pregnancy occurred twice with persistent hymen, the second child being delivered by forceps, and the hymen again contracting. Unusual forms of the hymen are by no means rare, and their variety is considerable. Deleus, in London Medical Record, August 15, 1878, tells of a case in which the hymen of a girl 15½ years old was so thick as to successfully resist defloration, although the violence was sufficient to produce vulvitis. The same author tells of two cases in which the membrane was biperforate, and the median portion was an effectual obstacle to defloration.

¹ *Handbuch*, p. 102.

the vagina turgescent and very moist. The mucous membrane of the uterus was highly injected, and the mouth of the womb open. In its cavity there was found a yellowish-white liquid of gelatinous consistency, and which, from its smell and other peculiarities by chemical reagents, was evidently semen. The dead body of the woman had been found lying near a public road, with the clothes thrown up over the face, exposing the lower parts of the body, and the thighs stretched widely apart. Other marks of violence were found upon the body, but the cause of death was forcible suffocation. This opinion, given by the official surgeon, was confirmed by the subsequent confession of the criminal, that, while violating the person of the deceased, he had endeavored to stifle her cries by forcing the clothes over her face.

§ 253. (2) *Seminal stains* upon the clothing of the female form, is, however, the most reliable medical evidence in rape either upon children or adults. It is of course evident that they will not always be present, since none of the semen may be then shed outwardly. On the other hand, the mere presence of seminal stains upon the female's clothing is, of itself, no proof at all that violence was attempted, and still less that penetration was effected. Moreover, all that constitutes the crime of rape, including penetration, may have been completed without the occurrence of seminal emission. The detection of semen upon the female's clothing must, therefore, be regarded only as corroborative of the signs derived from the condition of the genital organs and other parts of the complainant's body, as well as from other circumstantial evidence. Practically there is considerable difficulty in ascertaining the presence of seminal spots; in illustration of this remark, we cannot do better than quote the words of the acute Dr. Casper, than whom there is, perhaps, no better authority.¹ He says: "In all the numerous cases which have come under my observation, I have never omitted, even when several months have elapsed since the alleged rape, to direct my attention to the *chemise*. But this is not the white, fine, and frequently changed garment of the upper classes of society, but almost without exception of coarse material, ragged, and not washed for weeks or months; the lower half presenting two large, disgusting stains, made up of a compound of menstrual blood, dirt, excrement, urine, gonorrhœal matter, etc., etc.

¹ Vierteljahrsschrift für ger. & öff. Medecin., Bd. I, H. 1.

Nothing is said of this 'in the books;' and hence the possibility of recognising traces of semen in such a mixture is out of the question. But we have in the microscope, which, as well as I am aware, Rudolph Wagner first used for this purpose, an excellent means of diagnosis."

§ 254. (a) The *microscopical* characters of semen can be recognised equally in the dried spot and in the recent secretion.¹ In the former, however, the spermatic animalcules will most probably be dead, and in a fragmentary condition. M. Bayard² has been able to recognise them in spots as much as six years old. The following directions for preparing the spots for microscopical examinations are given by M. Bayard: "The tissues covered by the stain should be allowed to macerate in lukewarm water for several hours. The liquid should then be filtered, and if the spots have not entirely disappeared, the tissue should be placed in a porcelain cup with a little distilled water, and heated over an alcoholic lamp to 176° F. If any glutinous matter still remain upon the filter, it should be again macerated in water, to which a sixth part of ether or ammonia has been added. All the resulting liquids should then be poured upon the same filter. The point of this, being carefully cut and reversed upon a glass slide, should be moistened with ammonia to dissolve the fatty matters, and the paper then removed, leaving the matter to be examined upon the glass." This method is objectionable because the degree of heat and the various successive manipulations must tend to disintegrate the animalcules. Schmidt, in his valuable paper,³ recommends the following simple plan, which has, moreover, the advantage that the spot need not be cut out. The inner surface of the spot, which is known by a slight shining prominence in the centre, and easy to find by the light of a candle, should be turned outward, and the tissue so folded that the middle of the spot shall form the apex of a funnel-shaped bag, which should be dipped in a watch-glass half filled with water. After three or four hours, warm the water in the watch-glass over an alcohol lamp, after the addition of a drop of ammonia. A drop of the water may then be examined for *spermatozoa*, and, being dried upon a glass plate, kept for future reference. Koblanck recom-

¹ As to blood stains, see *infra*, §§ 304 *et seq.*

² Ann. d'Hyg., t. xxii.

³ Die Diagnostic verdächtiger Flecke in Criminaffällen.

mends the still simpler method of cutting out the suspected portion of linen, macerating it for five or ten minutes in a few drops of distilled water, and pressing it with a glass rod.¹ Dr. J. G. Richardson² says that the use of high powers of the microscope (1200–2800 diameters) enables us to detect spermatozoa with increased certainty, and that their appearance under a high objective is so characteristic, that we can easily pronounce the stain to be seminal, even if we find only imperfect specimens of spermatozoa in which the greater part of the tail has been lost. On the other hand, Drs. Woodman and Tidy³ think, that under no circumstances should the expert admit a given stain to be seminal unless complete spermatozoa are discovered.

§ 255. Spermatic animalcules exist in all animals capable of procreation, and are found in the semen of man from the age of puberty to quite an advanced period of life. "They present an oval head, with a thickened and rounded posterior border, to which the tail is attached. The head is prolonged anteriorly into a thin disc, slightly depressed in the centre. Hence when seen laterally, the head appears more or less pyriform. The thickening is somewhat greater on one side than upon the other. The length of the head amounts to 5 millimetres; the breadth, 3 millimetres; the greatest thickness, 1 millimetre. The tail is rather attenuated where it is attached to the head, enlarges to 1 millimetre, and then runs out to a point for a length of 50 millimetres."⁴ It is hardly possible for one accustomed to microscopic examinations to confound spermatozoa with other objects, unless they should be *all* in a fragmentary condition. In such case, an opinion should be given and received cautiously. When *any* are found entire, we do not think that there is any other microscopic animalcule which a practised observer can mistake for them. It is important to bear in mind that the absence of spermatozoa from the suspected stains is not conclusive of their not being seminal. For it is certain that, after debilitating sickness or excessive venery, and also in old men, the seminal liquor often contains but few if any animalcules. In a case reported by Dr. Beale⁵ fibrillæ were found in

¹ Cannstatt's Jahresbericht, 1853, vii. 15.

² Handbook of Medical Microscopy, Phila., 1871, pp. 299 and 302.

³ Forensic Medicine and Toxicology, Philadelphia, 1882, p. 503.

⁴ La Valette St. George in Stricker's Histology. Sydenham Society, vol. ii. p. 149.

⁵ Archives of Medicine, No. iii., p. 251.

the urine bearing a certain resemblance to spermatozoa, but which were concluded to be forms of fungi.

§ 256. Casper says, that, "though stains are proved to be of seminal origin when these specific zoosperms are found in them, yet the absence of spermatozoa does not prove that these stains have not been caused by human semen," and gives the result of numerous observations in support of his statement.¹

§ 257. It was formerly supposed that spermatozoa were the only bodies ever found in this connection that had motion and consisted of a head and tail, but M. Donné has of late described an animalcule, sometimes found in the vaginal mucus of females careless of cleanliness, which he has termed trichomonas vaginæ. It is found mixed with granular bodies larger than those often found with spermatozoa. The head of a trichomonas is three times the size of that of a spermatozoa, and has upon its circumference a row of from four to six short cilia.²

§ 258. (b) With respect to the *chemical* relations of semen, we think little need be said. The spots are usually of a slightly yellow color, somewhat stiff, as if the tissue were starched, and give out the peculiar odor of semen when moistened. They become of a deeper color by being held near the fire, and small whitish specks become visible in them—an effect which is said not to occur with stains from other discharges. Dévergie first showed that spermatic stains on linen, when held near the fire, assume a deep nankin-yellow tint, while albuminous spots remain unaltered. This method has proved successful even when the matter of a suspected stain upon some dark-colored stuff has been soaked out of it and transferred to white linen. M. Lassaigne informs us that a similar color is developed in *albuminous* stains when they are heated after having been moistened with a solution of plumbate of potassa, but this effect is not produced in spermatic stains, nor in those produced by gelatin, starch, gum, or dextrine.³ Semen is alkaline, glutinous, and but slowly soluble in water. When seminal stains are not mixed with any other matter, they may be recognised by the following properties, in addition to those just mentioned. The solution obtained by macerating the stain in distilled

¹ For. Med., vol. iii. 296.

² Guy's Forensic Medicine. London, 1868, p. 46.

³ Annals d'Hygiène, 2ème sér., x. 405.

water is not limpid, is not coagulable by heat, gives a characteristic odor on evaporation, and, when the latter is complete, there is left a shining transparent substance, sparingly soluble in water, but yielding a glutinous solution with potash. Pure nitric acid causes no precipitate.¹

§ 259. 5th. *Feigned rape*.—The following singular case occurred in France. Marie V_____, aged twenty-eight years, was seen to fall down, apparently in a faint, near the house of her uncle, the district schoolmaster, at the entrance of a field adjoining the public road. Her hands were found fastened by a cord, her handkerchief was tied over her mouth, her hood (capote) was drawn over the upper part of her face and fastened by pins in front of the eyes, leaving, however, a sufficient interval for the use of sight; her clothes were soiled with mud at the lower part only, and her camisole was laced. She did not apparently regain consciousness for several hours; she then related, with circumstantial detail, that she had been assaulted by four young men who had endeavored, though unsuccessfully, to violate her person. A medical examination being ordered, a vast number of superficial linear incisions were found, made apparently with the point of a knife or scissors; there were no contusions or marks of recent violence on the genital organs or their vicinity. Her clothes were not torn or crushed; and in her pockets a penknife and scissors were found, on the points of which there were slight traces of blood. The girl at last, after much hesitation, confessed that she had not been the victim of any assault, but that in a paroxysm of hysteria, without any reason to account for the strange idea which took possession of her mind, she had herself inflicted these wounds with scissors on the parts of her body which she had been able to reach. The legal proceedings were consequently stopped.²

At a meeting of the Académie de Medicine, three years since, Prof. Fournier had a paper on the artificial productions of the signs of defloration in young infants, in which he called attention to the occasional occurrence of such cases. He points out that their detection must be by moral rather than medical acumen, and urges the importance of caution upon the part of the physician. He further

¹ For evidences derivable from traces of *blood*, *vide* BLOOD-STAINS.

² Lond. and Ed. Monthly Jour., Dec. 1853, p. 550; from Gaz. des Hôp., Oct. 30.

and very properly urges that certificates should only be given upon proper legal requisition, and that in making out a certificate the examiner should confine himself strictly to a statement of the actual lesions observed, without committing himself to an opinion as to the method of their production.¹

§ 260. 6th. *Rape by females*.—An instance of this kind is related by Casper, in which a child only six years of age received a gonorrhœa from his governess, with whom he slept. In another and far more horrible case, a mother satiated her unnatural lust with her own son nine years of age, upon whose body, however, no traces of the crime were perceptible.² Two cases have occurred in France, in one of which a female of eighteen years obliged a boy under fifteen years to comply with her wishes; and in another a girl of eighteen was charged with rape on two children, the one of thirteen and the other only eleven years of age. She was affected with syphilis, which she communicated to the children. It is stated also, that, from a narrowness of the vagina, she was unable to gratify her propensities with adults. The only means by which the rape can be established through medical evidence is where gonorrhœa or syphilis has been thus communicated.

§ 261. 7th. *Pæderasty*.—This unnatural crime demands but little notice from us. It has been customary for authors, in describing the physical results of this vice, to enumerate various local injuries, such as laceration and a patulous condition of the sphincter ani, prolapsus of the rectum, and ulcerations, together with constitutional effects, as consumption, dropsy, etc., as the inevitable results by which the commission of it could be ascertained. Tardieu,³ speaking of the recent signs of unnatural violence, says that they are found to differ with the amount of force employed, the size of the organs, the youth of the victim, and his freedom from previous pollution of the same kind. In different cases they vary from redness, excoriation, and painful heat in the anus, and difficulty in walking, to fissures, lacerations, extravasation of blood, and inflammation of the mucous membrane and its subjacent cellular tissue. The observations of Parent-

¹ *La France Med.*, 1880, p. 692; *Phila. Med. Times*, vol. xi. p. 200.

² *Gericht. Med.*, ii. 129.

³ *Attentats aux mœurs*, p. 123.

Duchatelet,¹ and of Casper,² show, however, that such consequences are far from being even the common effect of this disgusting vice. The former of these authors speaks from a long experience; he says that he has *never* observed the results above enumerated. Dr. Casper, in a valuable monograph on this subject, in which he communicates a number of cases which fell under his notice, says, that none of the signs enumerated by authors are to be depended upon. In one case, however, mentioned by him, in which a medical examination was obtained *immediately* after the commission of the crime, the sphincter ani was lacerated to the depth of two lines, and the parts irritated and painful. The most frequent result which he witnessed may be described in the words of Zacchias, strangely heretofore overlooked: “*Multo magis frequentem tam nefandi coitus usum significare poterit ipsius podicis constitutio, qui cum ex natura rugosus existat, ex hujusmodi congressu lævis ac planus efficitur, obliterantur enim rugæ illæ in ani curriculo existentes ob assiduam membra attritionem.*” He also describes a funnel-shaped depression of the nates, as a frequent result. It should be remembered, however, that these observations were made upon persons whose lives had been spent in the practice of this degrading vice, or who had been for a considerable time in the practice of it. Syphilitic ulcerations or growths, in these parts, although of suspicious origin, may be really due to other causes than a direct transmission by unnatural connection. Marks of violence may be naturally expected in young persons.

§ 262. The frequency of this crime is probably much greater than the statements above quoted from Parent-Duchatelet and Casper would seem to indicate. Tardieu states that on two occasions the sudden descent of the Parisian police upon certain dens of vice resulted in the capture of eighty-seven in the one, and of fifty-two in the other, persons found *flagrante delicto*. From these in part he obtained the perfect confirmation of the description of Zacchias in regard to the signs of this vice when habitually indulged in. In two hundred and five cases of avowed criminality, these indications were

¹ *De la prostitution dans la ville de Paris* vol. i. p. 225.,

² *Vierteljahrsschrift für ger. u. öff. Med.*, Bd. i. H. 1. Also *Ibid.* Bd. vii. H. 2. For an historical account of the vice, see “*Geschichte der Lustseuche im Alterthume nebst ausführlichen Untersuchungen über den Venus und Phallus-cultus, Bordelle, Νονος δηγεια der Skythen, Pöderastie und andere geschlechtlichen Ausschweifungen der Alten; etc.*” By. Dr. Julius Rosenbaum. Halle, 1845. 8vo.

wanting only fourteen times. In addition to the details already given, he describes relaxation of the sphincter ani, dilatation of the anus, incontinence of feces, ulcers, piles, fissures, fistulæ, etc., as consequences of this detestable crime.

It is unfortunate that there is no medical evidence by which the crime can be brought home to the *active* transgressor; Tardieu, however, describes as effects of habitual indulgence in it, a tapering form of the whole penis, when this organ is slender, and when it is of large dimensions, a similar shape of the glans alone.

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CHAPTER I.

WOUNDS.

I. General Considerations.

§ 266. 1st. *What a wound is.*—The term “wound,” in popular language, can hardly be misunderstood. It is a form of bodily injury caused by external violence, and involving a breach of continuity in the soft parts. It may be questioned whether burns and scalds can properly be ranked as “wounds.” The immediate effect of the application of a burning or heated body to the skin may not be such as to cause more than a redness of the surface, or an elevation of the cuticle into a blister; but the surface of the skin may afterwards, by the giving way of the cuticle, be exposed. Hence the reader will perceive that any legal limitations of the meaning of the word, whether based upon popular or professional definitions, are lia-

ble to be erroneous, if the intention be really to designate the results of external violence by a name which shall comprise them all. In treating of this subject in its medical aspect alone, we shall make use of the word *wound* as expressive of any form of bodily injury caused by external violence, since it is only by such a course that the medico-legal bearings of the subject can be properly considered. Hence we have used the term WOUNDS as a convenient designation for this chapter, entirely irrespective of the possible surgical or legal limitations of the word.¹

§ 267. 2d. *General definitions.*—Wounds are usually classified, in reference to their visible marks upon the skin, into incised, punctured, lacerated, contused and gunshot wounds. Although a division into mortal and non-mortal would appear to have a more direct and useful bearing upon legal medicine, yet the unexpected complications, and the various extraneous causes which give gravity to the simplest cases, and, on the other hand, the favorable termination of some injuries of apparently the most dangerous nature, render any such classification impracticable. These facts will become apparent in the course of this chapter, and the reader will not fail to perceive that in medico-legal practice, every wound must be judged by itself; the general principles and rules of surgery being subject to constant modifications from individual peculiarities.

§ 268. 3d. *How far dangerous.*—The varieties and the degree of danger attending wounds in general, depend very much upon some of the following circumstances: “the extent of the injury; the kind of instrument with which it has been inflicted; the violence which the fibers of the part have suffered in addition to their division; the size and importance of the blood-vessels and nerves which happen to be injured; the nature of the wounded part, in respect to its general power of healing favorably or not; whether the operations of the system at large and life itself can be well supported or not, while the functions of the wounded part are disturbed, interrupted, or suspended by the accident; the youth or old age of the patient; the goodness or badness of his constitution; and the opportunities which there may be of administering proper surgical aid and assistance of every kind.”²

¹ The legal meaning of the term “wounds” is considered in another treatise, Whart. Cr. Law., 8th ed., §§ 533 *et seq.* And see *infra*, §§ 776 *et seq.*

² Cooper's Dict. of Pract. Surgery.

But in this country the physician is seldom called upon by a legal tribunal to offer an unconditional opinion upon the probable danger of a wound, his assistance is more frequently invoked for the purpose of deciding how far a given wound was the cause of death, and hence his testimony is required before the coroner upon the post-mortem examination. No one should be willing, upon theoretical grounds alone, to give an opinion as to the agency of the wound in producing death. A careful post-mortem inspection will either reveal the violent cause of death, or demonstrate that it was not due to external violence; it is the duty of the physician whose opinion is desired to make the examination most carefully himself, and to base his opinion entirely upon this, and not upon previous notions of the probable nature and effect of the wound.

Whatever parts of this examination call for the application of knowledge of which he may not be possessed, as the use of the microscope, or chemical analysis, should be committed to one who is really an "expert" in these branches. The idea is much too prevalent, and should be corrected, that the practitioner of medicine must necessarily be acquainted with all the appliances and new modes of investigation which modern science has produced; in other words, that every physician is equally competent to undertake the examination of a case involving the question of homicide. It is to this cause chiefly, viz., the disparity in the attainments of one physician as compared with another, and also to the natural division of medical science and practice into numerous departments, some of which may be cultivated to the exclusion of others—that the "disagreement of doctors" is really due. Men of equal medical attainments will rarely differ upon an essential point of pathology or practice, but ignorance, or defective knowledge in medicine, does not differ from that in any other branch of science, in being usually associated with presumption and obstinacy. Still, there are few practitioners of medicine who are thoroughly prepared to enter upon an examination of all the medical aspects of a case of violent death; familiarity with the means required to carry through such an investigation can be gained only by special study, for which, to the majority, time is wanting.

Circumstances may, however, impose upon the physician the duty of making an examination for which he does not feel himself fully competent. In remote or interior parts of the country the means for the successful prosecution of a medico-legal inquiry are usually not at

hand; whoever may be obliged to undertake an examination under such circumstances should endeavor to obtain the assistance of a colleague, and should candidly represent to the authorities the necessary imperfection of the examination, and what influence this may have upon the objects of the inquiry.

§ 269. 4th. *Examination of the body.*¹—The following points must be carefully noted; the locality, the direction, and the dimensions of the wound; whether there is a loss of substance or not; and whether the wound was inflicted before or after death, with the grounds of the opinion; the probable cause of the wound, and position of the body at the time; the results of the injury (ecchymosis, swelling, hernia of internal organs, concussion, inflammation, suppuration, ulceration, gangrene); notice of the clothes of the deceased, especially the portion (if any) corresponding to the place of injury; comparison of the weapon with the wound; medical assistance, and by whom rendered. Besides these general points which claim attention, a very carefully detailed account of the wound itself is required, not only to ascertain the nature of the weapon with which it was given, but also to learn how far it has penetrated the body, and what organs have been wounded. And, moreover, the importance of a general and careful examination of all the organs of the body should not be forgotten, for notwithstanding the immediate cause of death may be evident, it is still advisable to be sure that there was no cause of death in any other part. Although there may be no suspicion of poisoning, the stomach should be opened. In a case often referred to, a girl died while her father was chastising her for stealing, and on account of the marks of violent treatment upon her body, it was supposed that this had caused her death. On opening the stomach, however, it was found to be inflamed, and contained a white powder, which was proved to be arsenic. The girl had taken the arsenic in dread of her father's anger, upon the detection of the theft; she vomited during the flogging, and died in slight convulsions.

It may even happen that although no marks of violence can be found externally, or at least none which will explain the person's death, internal injuries may be discovered upon dissection, which will render it certain that the death was violent. Indeed, Casper goes so

¹ A more detailed account of the changes after death will be found, *infra*, §§ 540 *et seq.*, 776 *et seq.*

far as to declare that as a general rule when death follows an injury, suddenly or speedily, in consequence of internal hemorrhage or other effect of laceration of an internal organ, the signs of external injury are either slight or are entirely wanting. Among numerous instances of this description, furnished by Casper's experience, the following is one of the most striking. On a cold winter's night a wagoner was descending the hill from Spandau with a heavily loaded wagon, and dismounted, in order the more easily to guide his team. In doing so, he was thrown violently against one of the poplar trees which line the road, and where, in the course of the night, he was found dead. The only external injuries consisted of a slight abrasion upon the left arm, and a similar one upon the right temple. In the head there was nothing worthy of note, except that the transverse sinus was unusually distended with blood. On opening the spinal canal, about a quart of dark fluid blood escaped. The spinous process of the first thoracic vertebra was broken off. The deeper spinal muscles were ecchymosed, but the spinal marrow was uninjured. The left plural cavity contained about thirty ounces of liquid blood. The pericardium was torn completely across, and the heart, severed from its large vessels, lay almost entirely loose in the cavity of the thorax. The open ends of the aorta and pulmonary artery were distinctly visible. The heart itself was sound and firm, and on both sides, but in the ventricles especially, contained much dark coagulated blood. The left lung was entirely torn through its middle portion, and in the right lobe of the liver was a laceration two inches long, by half an inch deep. And yet the exterior of the body presented nothing remarkable.¹

A case is reported by Dr. Ellis, of Boston, of a woman who was knocked down and run over by a sleigh. She lived for ten days after the accident, and there was no mark of external injury. On examination after death, the liver was found to be lacerated, the common bile-duct was torn across, and several fractures appeared in the right kidney.²

§ 270. The phenomena which intervene between death and putrefaction are often of assistance in throwing light upon the mode and period of death. The changes which take place in the body after death are due to physical and chemical laws.

¹ Gericht. Med., i. 122.

² Boston Med. and Surg. Journ., April, 1860, p. 222.

5th. *External phenomena*.—Soon after death, while the body is still warm, the peculiar cadaveric smell (not putrefactive) is perceived at the same time that the surface becomes pale. The blood sinks gradually to the more dependent parts, occasioning a discoloration of the skin resembling in some respects a contusion produced during life.¹

The complete cooling of the body (with the disappearance of the peculiar smell just referred to) is accomplished much more slowly than is usually supposed. According to Bock,² it does not take place in less than from fifteen to twenty hours. Externally, the reduction of temperature occurs more rapidly than in the interior of the body, but in both cases it is dependent upon the temperature of the surrounding air. The bodies of old people and children, of the thin, anaemic and wasted, grow cold at quite an early period after death. But in those who die suddenly, in the fat and robust, the animal heat is more slowly parted with. *Rigidity* or *rigor mortis*, occurs generally within twelve hours after death, and lasts from thirty-six to forty-eight hours. It is more complete and lasting in those who have died suddenly, or in the course of acute inflammatory diseases, while in the weak and those exhausted by long illness it is feeble and transient. It may be distinguished from the rigidity occurring in cases of apparent death (syncope) by the fact that in the latter case the rigidity is spasmodic and partial, arises and disappears suddenly without any regularity, and returns after the contracted limb has been extended, which is not the case to the same extent in true post-mortem rigidity.

§ 271. 6th. *Internal phenomena*.—The blood usually remains fluid for two or three hours after death. It accumulates in the veins, owing to the last contraction of the heart and arteries having more or less completely emptied the arterial system. The amount of blood found in the cavities of the heart, and the existence of coagula, depend upon the nature of the blood itself, and the mode of death, whether rapid or protracted.

§ 272. *Wounds made before or after death*.³—The distinction between wounds made before and those made after death depends upon the signs of vital reaction in the wound and its vicinity. If the

¹ See *infra*, §§ 540 *et seq.*, 620 *et seq.*

² Gerichtliche Sectionen des Menschlichen Körpers.

³ See on this topic, §§ 265 *et seq.*, 776 *et seq.*

signs of inflammation, or its products, are found; if the wound be swollen and discolored; if plastic lymph have been thrown out between its edges; if suppuration, or gangrene, or cicatrization have taken place; we have not only certain proof that the wound was inflicted during life, but also that death could not have been immediate. The question, therefore, as to *post-* or *ante-mortem* infliction of the wound, cannot arise when any of the processes referred to have taken place. But, when none of these signs are recognised, there may be room for doubt as to the period of its infliction. Many cases occur in which no traces of suppuration or inflammation can be detected, although an injury was received during life. This is especially the case when death results rapidly from hemorrhage from a large artery or vein, so that if a wound is made upon the dead body near to that which occasioned death, it will be impossible to distinguish the one from the other by any characteristic sign.¹

If death have resulted from a wound, not immediately, but still before the effusion of plastic lymph, its edges will be found swollen and everted, and coagulated blood effused in the track of the wound and in the adjoining cellular tissue. When, however, it has proved immediately fatal, as in some penetrating wounds of the heart, aorta, and spine, the above-mentioned characters will not be found. This fact is most probably due to the rapid drain from the capillaries, in consequence of internal hemorrhage, or to the sudden cessation of the action of the heart. Thus, in a case related by Casper, in which a woman was instantly killed by a table-knife which was thrust through the arch of the aorta, entering the chest between the first and second ribs, the wound presented sharp and smooth edges, without a trace of either fluid or dried blood; in fact it was exactly like a wound made upon the dead body.² It is therefore of importance to remember, that in wounds which prove immediately fatal, there may be no signs of vital reaction, and no outward effusion of blood. A case is very easily supposable, in which a wound in the region of the heart might be designedly inflicted after death; as, for instance, to divert attention from the real cause of death, which may have been due to poisoning. Although no distinction should be possible, from an inspection of the external wound, the absence of internal hemorrhage would, in such a case, betray the period at which the wound was made.

¹ As to legal questions concerning wounds, *infra*, §§ 776 *et seq.*

² Gericht., Leichen-öffnungen, 1s. Hundert., Fall. 9 1853.

Dr. Taylor endeavored to solve the question of the differences between wounds inflicted before and after death, in an experimental way. In one experiment, an incised wound, about three inches long, was made in the calf of the leg, two minutes after its amputation. The skin retracted considerably, the adipose tissue underneath protruded between its edges, but the quantity of blood which escaped was small. Examined after the lapse of twenty-four hours, the edges of the wound were found red, bloody and everted; the skin not in the least tumefied, but merely flaccid. A small quantity of loosely coagulated blood was found at the bottom of the wound, but no clots were found adherent to the muscles. In the second experiment, which was made ten minutes after the limb was amputated, the skin appeared to have already lost its elasticity, the edges of the wound became very slightly everted, and scarcely any blood escaped from it. On examination, twenty-four hours afterwards, the wound presented *none* of the characters of a wound inflicted during life, except that, at the bottom of the wound, a few coagula were found. Other experiments were made at a still later period after the removal of the limbs, but it was found that the wounds then made possessed still fewer points of similarity with wounds inflicted during life. From these experiments, one fact, at least, may be fairly inferred—that the coagulation of the blood is not a safe criterion of the time at which the wound was made, but that, as long as the body retains its warmth after death, this apparently vital process may still take place. If, therefore, a wound be made upon a person just dead, it is not impossible that the blood will coagulate in the wound. Facts, more pertinent than the above experiments, are, however, required to establish the fact beyond a doubt, as the accidental determination of the question upon the entire body would be naturally more conclusive than experiments upon separate limbs. On dissecting the body of a person who died of the low typhus fever which prevailed during the autumn of 1847, in a district inhabited by the lowest class of negroes, the blood was quite fluid, although death had taken place but six or eight hours before; but when allowed to stand in a cup, or in the chest whence the lungs had been removed, it speedily formed a dark and moderately firm coagulum.¹ Several cases in which the blood retained its coagulability after death, are reported by Casper. In

¹ A. Stillé, Gen. Pathology, p. 426.

one of these, relative to a man who was suffocated by coal gas, it is stated that four days after death, and during very cold weather in January, the blood flowed freely when the body was opened, but coagulated quite rapidly, and so firmly that the clots could be raised quite easily with the handle of a scalpel.¹ Although the swollen and everted condition of the lips of the wound is a good indication of its having been inflicted upon the living person, this appearance may be removed by causes acting after death. Thus, if the body have lain in the water, this, together with the blood effused in the wound, may have disappeared before the inspection is made, by the maceration to which the body has been thus subjected, and it is also often materially changed by the advance of putrefaction, since, by this process, the skin very soon becomes puffy, and many of the relations of the wound are changed. This is strikingly true of fat bodies, in which wounds, and especially incised ones, often assume, when the body begins to swell, an appearance which it is very difficult to distinguish from the effects of the inflammatory process.

§ 273. The amount of *hemorrhage* is generally a reliable test of the period at which the person was wounded, but is, of course, only applicable in wounds involving a solution of continuity. In those made after death, even while the body is yet warm, the amount of blood poured out, will, of necessity, be far less than while the active circulation of the blood is going on. This is especially true of wounds of certain parts which prove unavoidably fatal by copious and sudden hemorrhages, such as those of the heart, aorta, or any of the great blood-vessels. In fact, wounds involving the left side of the heart, or the arteries, would probably, if made after death, be attended with no hemorrhage whatever; whereas, in the division of any of the venous trunks, soon after death, the amount of blood lost would be far smaller than would have been poured out during life, and would depend, in a great measure, upon the position of the part injured. In a celebrated case of assassination, tried in Berlin, the head of the murdered person had been severed from the body, but, at the same time, other injuries of a fatal nature had been inflicted. Dr. Casper gave his opinion that the neck had been severed before life was extinct, for the reason, that a very large amount of blood was found to have been effused from the cervical vessels. The chief

¹ Gericht., Med. i. 29.

distinction, therefore, between hemorrhage before and after death, is that in the latter case the amount lost is comparatively trifling and exclusively of a venous character.

§ 274. While the signs we have referred to are the principal means of discrimination in wounds involving a loss of blood, there is another large class of wounds to which they do not have so extensive an application. Thus, although in *contused* wounds the coagulation of the blood under the surface injured sometimes affords, especially in injuries of the head, an indication of the blow having been given during life, yet, on the other hand, the want of coagulation is no proof that it was not inflicted till after death. The blood may, from various causes, remain fluid after death. Its coagulability may be impaired by disease, or by the mode of death. If, for instance, the person murdered has been affected with scurvy, or his death caused partly by any mode of asphyxia, the fluidity of the blood under contused wounds, or indeed in any kind of wound, in such an individual, would not be inconsistent with the opinion that the wound was given while the person was alive.

§ 275. 8th. *Ecchymosis or suggillation.*—The meaning of this term is an effusion of blood under the skin, but in general medical parlance the name is applied to the discoloration of the skin produced by this extravasated blood. In cases where it is necessary to discover whether the person was living at the time his injuries were received, it is customary to rely upon the presumptions afforded by the appearance of the ecchymoses. Their color varies according to the time elapsed since they were produced; at first they are purple, and pass through various shades to black, then through violet, green and yellow, until their disappearance. In general, the discoloration appears within twelve hours after the injury, and sometimes immediately after it, the violet color is seen on the third day, the green from the fifth to the sixth day, and the complete disappearance of the spot is, in healthy persons, from the tenth to the twelfth day. The changes are more rapid in the young than in the old, and depend also upon the force and extent of the blow.

If the extravasation be deeply seated, the external discoloration will not immediately occur, but may be delayed even for several days, and, in parts where the cellular tissue is abundant, will not always correspond to the spot on which the injury was received, but will be found over that to which the blood has gravitated. Indeed,

the cutaneous discoloration may not appear until after death. Thus, in a person who died in thirty-five hours after having received a violent kick from a horse, rupturing the bladder, there was no ecchymosis in the seat of the blow until after death.¹ The amount of blood extravasated, except it lie immediately under the skin, cannot be determined by the degree of the external bruise, since, in many of those cases of violent death, in which a heavily loaded vehicle has passed over the body, or a great weight has fallen upon it, there has been, externally, no discoloration whatever, or in such a light degree, that the vast amount of internal disorganization and hemorrhage could hardly be suspected. In the case already quoted from Casper, in which a wagoner was crushed to death, and upon opening the body the lungs and liver were found to be ruptured, and the heart completely torn from its attachments, the only external injuries discoverable were two trifling abrasions of the skin upon the temple and the arm.

§ 276. The marks observed in those cases where contusions have been purposely made upon the dead body, resemble, in some cases, those which are made during life. From experiments made by Dr. Christison, it appears that blows inflicted two hours after death will produce a discoloration of the skin, similar to what might be expected during life, except in regard to extent, which does not correspond with the severity of the blow. The experiments of Dr. Christison establish a strong presumption, that, when contused wounds have been inflicted *immediately* after death, the external similarity will be still greater, and the correspondence between the amount of violence and the discoloration more exact. While this author was performing his experiments to ascertain whether blows given after death would produce similar appearances to those inflicted during life, he selected, as a subject for a series of these experiments, the body of a female who had died in the infirmary. The body, being afterwards carried to the dead house, and there seen by some persons who were not aware of the experiments having been performed, was not allowed to be buried until an inquiry had been made into the circumstances, so persuaded were these persons that the woman must have died in consequence of barbarous treatment received during life.

§ 277. In this connection, the following remarks of Casper are not

¹ Taylor, Med. Jur., p. 177.

without importance :¹ “Where death has been caused by violence, it is extremely common, especially where the bones lie immediately under the skin, to find suspicious spots upon the body. They are from one to three-quarters of an inch in diameter, usually rounded, red or reddish-brown, or dirty or yellowish-brown, more or less hard to the touch, and tough under the knife, but exhibiting no real suggillation. These spots may perplex the examining physician, and, indeed, when the mode of death is unknown or attended with suspicious circumstances, demand the closest examination and description, because they may possibly indicate and throw light upon a struggle in which life was lost. In the majority of cases, however, these pseudo-suggillations are produced at the moment of death by the body grazing or falling against some hard substance, and consequently have no relation to the cause of death. They may even be produced after death by the rough handling or carrying of the body, and may be imitated, after the lapse even of several days, by friction with a coarse brush or cloth, and so as not to be distinguishable from similar injuries produced during life.” “When,” says Engel, “these excoriations are found upon parts of the body in which the blood cannot settle after death, the portion of dried integument acquires a yellowish-brown color, and is translucent at the edges; on the other hand, if they form in situations where the blood tends to accumulate, their color is a very dark brown, and they cannot be distinguished from excoriations produced during life.” Casper insists upon the practical importance of these distinctions, declaring that the cases are numberless in which ignorance of them or inattention to them has led to the most erroneous conclusions and mischievous consequences.

§ 278. The inference from the considerations here presented, is not that there is no distinction possible between ecchymosis produced before and after death, but that great caution is necessary in giving an opinion upon this point. The external bruise must be carefully compared with the effusion into and under the skin and adjacent tissues. If the latter be at all extensive, and especially if the blood be coagulated, we think there need be little hesitation in declaring that the injury must have been inflicted during life. Moreover, there are few cases of vital ecchymosis, without attendant swelling of the skin and other signs of vital reaction. If, while the body is fresh, the

¹ Op. cit., i. 127.

ecchymosed spot be found at all swelled, there can be no suspicion of post-mortem violence. Also, if the ecchymosis, though trifling in extent, be accompanied with excoriations or abrasions of the skin, as is often found in cases of strangulation with the hand, the fact of the violence having been done upon a living person will be manifest. The difficulty of discriminating between contusions made before and after death will be much enhanced by the putrefactive process, the effect of which is to so alter the consistence and color of the skin and subjacent parts as to destroy all characteristic signs.

§ 279. Dévergie¹ has remarked that ecchymoses are often concealed on the bodies of the drowned, when first they are removed from water, owing to the sodden state of the skin; they may become apparent only after the body has been exposed for some days, and the water has evaporated.

§ 280. 9th. *Ecchymoses from natural causes.*—It can hardly be necessary to caution the physician against the possibility of mistaking the ecchymoses observed in *certain diseases* for the effects of violence. The morbid states of the system in which they are seen have so many other striking peculiarities during life and after death, that it would hardly be pardonable for a professional inquirer to overlook or misinterpret them. Thus in scurvy, purpura hemorrhagica, and petechial typhus, the shape, size and diffusion of the spots, in various parts of the body, the absence of swelling or other indications of violence, and the pathological changes in the mucous membrane of the mouth and the intestines, together with the fluidity of the blood, will afford more than sufficient reasons for rejecting all suspicion of violence.

The spots and blotches (suggillations) produced by *cadaveric changes* are more likely to give rise to mistakes. In persons unaccustomed to inspect the bodies of the dead, the stasis or congestion of the blood in the capillary vessels of the skin, which sooner or later invariable occurs, may lead to the suspicion of violence having been inflicted before death. This lividity is most apparent and extensive in those who have died suddenly in full health, by some asphyxiating cause. It occurs in almost any part of the body, but is usually deeper and more distinct in those which are the most dependent. The time at which it is developed varies from the moment of dissolution up to the occurrence of rigidity, and is, of course, hastened or retarded

¹ Taylor's Medical Jurisprudence, sixth American edition

by various causes, such as the mode of death, the season of the year, and the age of the subject. The blood is merely superficially diffused in the outer surface of the skin, and this mark alone ought to suffice to distinguish these discolorations from those produced by violence, since in the latter the blood is effused in the whole substance of the cutis and generally also in the subcutaneous cellular tissue, muscles, etc.

§ 281. The *forms* assumed by the marks of cadaveric lividity are various: sometimes the skin is mottled, at others large blotches spread over the surface, and at others again the lividity is more uniformly diffused, without necessarily appearing on a dependent part. The marks of the clothing which the deceased wore, if they have remained upon him until rigidity has taken place, give a very singular appearance to the skin. Those portions which have compressed the body tightly will be recognised by the paleness of the surface, while the intervening spaces may be deeply tinged. The folds of a sheet often thus communicate to the body an appearance of flagellation, the back being covered with stripes. These are called *vibices*, and are familiar to every one accustomed to the inspection of persons recently dead. This stage of cadaveric lividity, which is due to the congestion of the capillary vessels, runs gradually into another at the approach of putrefaction. This stage is characterized by the uniform purple or dark red discoloration of all the depending portions of the body, and arises from a transudation of the serum and coloring matter of the decomposed blood. Hence, when an incision is made into parts thus affected, as, for instance, over the occiput, the skin and subjacent tissues will be found thickened and infiltrated with bloody serum. But neither of these stages of cadaveric lividity ought to mislead the physician; the diffusion, the superficial character of the infiltration, or, as in the latter case, the peculiar kind of effusion, the want of any external injury to correspond with the internal marks of apparently great violence, and many other considerations, which it is hardly necessary to specify, ought to render the distinction an easy one. We are disposed to think that the possibility of serious error arising from the distant resemblance between cadaveric lividity or the discoloration of the skin caused by certain diseases of the blood, has been in general over-estimated, by writers upon legal medicine.¹

¹ As to signs of death, see *infra*, §§ 540 *et seq.* As to identification of dead bodies, see *infra*, §§ 620 *et seq.* As to legal questions, see *infra*, §§ 776 *et seq.*

Blisters produced by heat, says Böcker, although when laid open they may disclose a red skin, do not present characters which enable us to determine whether they were raised before or after death. For intense heat produces the same immediate effects in either. Scalding liquids, however, do not blister the dead body, they only cause the epidermis to peel off in shreds. The skull, when subjected to the action of flame, cracks and exfoliates.

II. *Classification of Wounds.*

§ 282. Wounds are classified according to the nature of the means by which they were produced, as, for example, "an incised wound," "a lacerated wound." It will at once be seen that, in legal medicine, the name by which the injury is designated, thus indicating the means by which it was inflicted, may, unless much discrimination be used by the physician, lead to incorrect inferences. It becomes important, therefore, to establish the relation between the injury and its supposed cause. In other words, it being recognised that the wound was produced on a living person by mechanical violence, by what instrumentality was it effected? This is not always evident upon a first inspection. In order that a correct judgment may be had, the earlier the post-mortem examination is made the more likely will it be to yield useful and positive results, for the occurrence of putrefaction, maceration in water, and various disturbing causes may materially alter the aspect of wounds.¹

In some kinds of wounds the nature of the cause is far more apparent than in others; thus incised and punctured wounds convey the idea of the employment of cutting or pointed weapons, whereas the cause of a contused or lacerated wound is much less easily discovered. Hence the caution is necessary that the means by which the injury was inflicted should be described in general terms only, and especially should the physician avoid giving too positive an opinion as to the particular weapon or other means by which it was produced, since he will often find himself deceived in his opinion. By indicating upon insufficient grounds any particular weapon as the one by which the homicide was effected, the ends of justice may possibly be defeated, or an innocent person wrongfully suspected or accused.

¹ See Whart. Crim. Law, 8th ed. §§ 533 *et seq.*, *infra*, §§ 776 *et seq.*

§ 283. 1st. *Incised and punctured wounds*.—Such is the name given to wounds made by weapons with a sharp cutting edge or point. In the former the superficial extent of the wound is usually greater than its depth; in the latter, the reverse is the case. In both these kinds of wounds the edges are cleanly cut, the edges separated and not contused unless the cutting portion of the weapon have been dull or possessed considerable convexity. The regularity and evenness of the incision is, therefore, a mode of distinction between wounds inflicted with weapons, properly so called, and those made by glass, crockery, nails, etc. The shape of the wound differs somewhat according to the region of the body and the tissues divided, as well as the state of tension or relaxation of the skin, and the direction in which the blow is given. Thus, when the weapon has penetrated in an oblique direction through the tissues, or when the latter are irregularly stretched, the shape of the wound will not correspond to that of the weapon; in such cases an incision is apt to assume a crescentic form, and if inflicted on a limb in a state of tension, its edges will be widely apart, and in the skin more so than in the subjacent parts. If a punctured wound have been made obliquely through the skin, it will present an oval or elliptical shape, and the orifice will usually be smaller than the diameter of the weapon producing it. A wound made in parts where the skin is thrown into wrinkles may present the appearance of several distinct wounds, as in the neck. From the experiments of M. Filhos, in 1833, it appears that a conical and rounded weapon produces small elongated wounds, with two acute angles; but these trials having been made upon the dead subject, the results are not fairly applicable to wounds on the living, because the vital contractility of the skin will necessarily greatly modify the shape of the wound. Nevertheless, several punctured wounds, made by the same weapon, may differ in shape, and be either triangular or oval, according to the circumstances already indicated as influencing the shape of the wound. Superficial wounds, and especially incised wounds, may, it is well known, give rise to fatal hemorrhage, if they happen to reach a large superficial blood-vessel. In such cases, as Casper has remarked, it is extremely difficult, if not impossible, to determine where was the commencement and where the end of the incision, whether, *e. g.*, it was made from left to right or in the opposite direction. And such points become of the greatest importance when we are called upon to determine whether a homicide or a suicide has been

committed. Attendant circumstances, as whether blood is found upon the right or the left hand, or on which portion of the clothing a cut exists, will help to remove doubt.

It is often also very difficult, or quite impossible, to determine the precise vessel from which the fatal hemorrhage took place. Nor is it often necessary; for the existence of the wound on the one hand and of the hemorrhage on the other suffices to explain the result.

A punctured or penetrating wound may be single upon the skin, and yet two or more internal wounds have been made by the same weapon. This is effected by the weapon having been only partly withdrawn after the outer wound was given, and then plunged into the body in another direction, as is often the case in a close struggle. Thus, in a case related by M. Bayard, the deceased presented a single gaping wound in the breast, out of proportion to the weapon found at the spot where the murder was committed, but the left ventricle of the heart was perforated entirely through, and its walls were wounded in another part also.¹

§ 284. 2d. *Lacerated and contused wounds.*²—These being frequently due to accident, and seldom presenting any peculiarity by which the use of a weapon can be positively inferred, an opinion can rarely be given, merely from an inspection of the wound, of the cause by which the injury was produced. A medical witness may indeed be enabled to state the possibility of the wound having been made with a blunt instrument, similar to that which is perhaps shown at the inquest or trial, or found near the deceased, but can seldom, on the other hand, deny that it may have been of accidental origin, or caused by a fall. Blunt instruments produce their effects partly by pressure, and crush, tear, or only bruise the part struck, according to the force of the blow and the resistance which it meets. A smooth blunt weapon produces ecchymosis and swelling; angular instruments, in addition, give rise to punctures, fissures and laceration. When an instrument is at once smooth, blunt and heavy, it may cause internal injuries of which little or no trace is visible upon the surface. In general, all such wounds bleed but little, and tend to heal by suppuration.³ When, however, they are situated upon the skull, they

¹ Briand Méd. Leg.. p. 317.

² See *infra*, §§ 776 et seq

³ Böcker.

often bear the aspect of incised wounds, the edges being apparently cleanly cut, and capable of being adjusted together. The division of the integuments is not, however, straight and regular as in an incised wound, and the angles of the wound are generally less acute. The contusion of the neighboring integuments, the extravasation of blood under portions of the skin, not embraced in the apparent incision, and often the existence of an irregular fracture of the bone, with internal extravasation, will not permit of more than a momentary mistake. But, practically, the chief difficulty in judging of the origin of lacerated and contused wounds is, that injuries of this kind may be received by a fall in a quarrel, or in the retreat of one of the parties, and similar in appearance to those which might have been produced by a direct blow. In such cases, the position of the wound compared with the known relative position of the parties at the time of the receipt of the injury, will be the chief source from which information will be derived.

An effect, and by no means an unusual one, of blows inflicted with blunt weapons, is the rupture of internal organs. Sound organs, says Casper, never rupture spontaneously, and only when subjected to extreme violence. Fissures of the base of the skull, rupture of the liver, lungs, kidneys, etc., are sure evidence of such an agency. The first of these always occur transversely, never longitudinally, and generally are within the anterior third of the skull. Rupture of the brain is extremely rare, and so is that of the trachea and oesophagus, that of the lungs is not common, and laceration of the pericardium or heart is even less so. Rupture of the liver, on the other hand, is both positively and relatively frequent. The direction of the fissures is usually transverse. A case is mentioned by Casper in which the anterior edge was entirely separated from the body of the organ. Rupture of the spleen, and of the gravid uterus also, takes place transversely; this injury of the remaining abdominal organs is extremely rare.

Casper appears to question the occurrence of rupture of the bladder, and states that he never met with an instance of this injury. It is not, however, extremely rare.

§ 285. In some cases it may not be unimportant to consider whether the wound may not have had a *spontaneous* or *accidental*

¹ *Vide*, § 853.

origin.¹ A number of criminal trials have taken place in Scotland in consequence of women, for the most part pregnant, having died of hemorrhage from the pudendum. In most or all of these cases, it has been averred that the wound was inflicted with criminal intent by the husband or others. A case occurred at Dundee, in which there were no grounds for suspicion that the woman had received a wound. She lived on good terms with her husband and neighbors. She had been straining at the night-stool when the hemorrhage came on. A large quantity of blood was found about her person; it had flowed from the genital organs, but not from the uterus, which was fully expanded in pregnancy. On examining the vagina, Dr. Kyle found a recent aperture in one labium, which he traced into a large vein; one of a plexus which extends some distance into the vagina. A case is related by Dr. Thomson, in which the woman, however, recovered after losing a large quantity of blood. In this instance, the woman's husband, a cattle drover, had been long absent from home, and on his return, remained alone with his wife about half an hour. The bleeding commenced immediately after this visit. A wound was discovered large enough to admit the finger to the depth of about half an inch, in the anterior wall of the vagina, at the union of its upper with its middle third. It was probably an accidental laceration, but if death had actually resulted, the existence of the wound might have given rise to suspicions of criminal violence.² Dr. Menzies relates that a woman three weeks after delivery, on rising from bed, accidentally fell on the top rail of a common stuff-bottomed chair. Profuse hemorrhage ensued, which, on examination, was found to proceed from a wound in the vagina nearly half an inch in length, and which looked exactly as if it had been inflicted with a sharp instrument.³ In another case reported by Dr. Ellis, and also of a pregnant woman, death by hemorrhage resulted from a lacerated wound of the vagina supposed to have been inflicted by her falling on the post of a crib.⁴ In a third case, related by Dr. Morland, a woman five months advanced in pregnancy, fell upon the roof of a wood-shed, by slipping upon one of the steps by which the roof was ascended. The hemor-

¹ See *supra*, § 272; *infra*, §§ 776 *et seq.*

² Am. Journ. Med. Sci., April, 1850, p. 535, from Edinburgh Monthly Journ. Feb.

³ Edinb. Med. Journ., iv. 624.

⁴ Boston Med. and Surg. Journ., Sept. 1857, p. 158.

rhage was very profuse, and, but for timely assistance, would probably have been fatal. The wound was an inch and a half long, by an inch deep, upon the internal surface of the left nymphæ.¹ In these cases there was nothing in the character of the wound to distinguish it from those in which the absence of contusion has been supposed to indicate a homicidal origin. They also appear to show the peculiar danger from hemorrhage to which wounds of the genitals expose pregnant women. Dangerous hemorrhage may also occur from varicose veins in the leg. The orifice from which the blood escapes being very small, and situated immediately over the enlarged vein, can hardly be mistaken for an intentional wound. Casper relates a case in which a woman, raising a broken chamber vessel under her clothes, for the purpose of urinating, wounded herself therewith in the vena saphena. The wound was one inch and three-quarters long, and three-quarters of an inch wide, and the vein was opened to the size of a pea.²

§ 286. That a serious injury may be produced by an apparently trifling cause, operating within a person, is shown by the following case which is related by Dr. D. F. Castella, of Fribourg.³

"A keeper of a public house, thirty-nine years of age, has a robust constitution, although he has suffered during his life from various maladies, apparently of a strumous nature. On the sixth of November 1861, he was seated in his bar with several customers, one of whom offered him a pinch of snuff, which he accepted. Not being in the habit of snuffing, he was at once seized with a fit of sneezing, which he attempted to restrain by shutting the mouth and forcibly dilating the chest. In this, however, he failed, and a violent expiration having succeeded to the excessive and prolonged dilatation of the thorax, he felt at the same moment in the left hypochondriac region a sudden sharp pain, accompanied by a very distinct crack, difficulty of respiration, and a very painful cough. I was at once summoned.

"I discovered in the middle of the body of the ninth rib on the left side a very evident crepitation, and an oblique solution of continuity. It was then a fracture of the second false rib on the left side. I was able to confirm this diagnosis, as the same symptom persisted during four or five days, with slight tumefaction of the sur-

¹ Id., Jan. 1859, p. 520

² Ger. Leichenöff., 2 Hundert. Fall., 43.

³ Am. Journ. Med. Sci., vol. 44, p. 249, from Glasgow Med. Journ., April, 1862, and Gazette des Hôpitaux.

rounding soft parts. No complication in the part of the pleura or lungs supervened."

§ 287. 3d. *Gunshot wounds.*¹—Gunshot wounds present striking differences in their appearance, according to the distance at which the piece was fired, and the number and character of the projectiles. If exploded in immediate contact with the body, the wound is large and circular, the skin denuded, blackened and burned, and the point at which the ball entered is livid and depressed. The blackened and burned appearance of the skin is due to the imperfect combustion of the grains of powder, and the point of entrance of the ball is larger than that of its exit. The hair, clothes, or other organic substance in the line of the shot, exhibit traces of burning. When, however, the weapon is fired at a greater distance, the appearance due to the imperfectly burned powder and the flame are no longer seen, the ball itself being then the only cause of the wound. In the celebrated case of Peytel, tried in 1839, for the murder of his wife, it was found that she had been killed by two balls which entered near the nose. The eyebrows, lashes and lids were completely burned, and a large number of grains of powder had imbedded themselves in the cheek. Experiments being made in order to determine the distance required to produce these effects, it was found that the weapon must have been held within a foot's distance. As already stated, the point of entrance is here smaller than that of exit. M. Matthysens has shown this by experiments upon the dead body. A pistol fired at twelve paces distance, with a ball fifteen millimetres² in diameter, made a wound in the breast of 8.5 millimetres in diameter; and at its point of exit on the back, one of ten millimetres. In two experiments, at the same distance, upon the forearm, the entrance wound was four millimetres less in diameter than that of exit; and when a larger ball, with a diameter of seventeen millimetres, was used, the same relations were preserved, both in the entrance wound being less in size than the ball with which it was made, and also three millimetres less in diameter than the wound of exit.³ Dr. Taylor, speaking of the present class of cases, in which the weapon is fired from a certain distance, says that the orifice of exit is generally three or four times as large as the

¹ See *infra*, §§ 776 et seq.

² A millimètre is equal to 0.03937 inch.

³ Quest. méd. lég. sur les plaies par les armes à feu, Gaz. des Hôpitaux, No. 145.

entrance aperture, which, it will be observed, is a much greater difference than is stated by M. Matthysens. But, strange as it may appear, in regard to a question apparently so simple, the very opposite statement is made by some writers. Of these may be mentioned Ollivier (d'Angers), cited by M. Malle,¹ who himself, after numerous experiments, concludes that in gunshot wounds the orifice of entrance, far from being constantly smaller than the orifice of exit, is, on the contrary, usually larger; and also Casper, who goes further, and declares that the former is *always* larger, adding that "all the more recent original observers very properly unite in this conclusion, which is the opposite of that which was formerly maintained."²

§ 288. According to M. Nélaton, when the wound is recent, the orifice which the ball has made on entering the body is depressed and contused, while that made by its exit is lacerated and prominent. In the former there is an actual loss of substance; in the latter merely a solution of continuity, and its edges, if brought together, would almost completely close the wound. Still, the irregularity of its flaps render it the larger, notwithstanding the loss of substance in the entrance wound. After some days the case, however, is different. The contused margins of the wound of entrance slough away, while those of the other become partly united, and its size is thus diminished, while that of the former is enlarged.³

§ 289. It is important, however, to observe that the relative size of the wounds depends not only upon the distance at which the weapon is held, but also upon other causes affecting the velocity of the ball. Thus the quality and amount of powder, the length and calibre of the weapon, the compression of the wadding, and the form of the projectile, all require attention. Hence, the relative size of the wounds of entrance and exit varies continually; and unless the velocity of the ball can be approximately ascertained, from a knowledge of the weapon used, and its proximity to the wounded person, it would be unsafe to draw a positive conclusion from this circumstance alone as to the position of the body and the direction of the line of shot, both of which are points occasionally of extreme importance. More reliance is to be placed upon the depressed and clean character of the

¹ Ann. d'Hygiène, xxiii. 462.

² Op. cit., i. 291.

³ Observations on Gunshot Wounds, made in Paris during the Summer of 1848, by Edw. Waters, M.D., Month. Journ., Sept. 1848.

entrance wound, and the bulging and lacerated aspect of that of exit. This fact has been substantiated by the experiments of M. Dévergie. When, however, the ball enters a portion of the body well covered with fat, this often protrudes between the edges of the wound, and will entirely mask its character.

§ 290. If the ball have traversed the clothing before attaining the body, it carries a portion of this with it; and should it have lost much of its force before reaching the body, the clothing is merely pushed before it into the wound, and upon pulling this out, the ball will often come with it. The hole made by a bullet in the clothing is smaller than it is itself, owing to the elasticity of the material, and also is depressed like that in the skin. The wound is usually circular in shape, but is oval if the ball have entered the body obliquely. If caused by a rifle-ball, it is said that a large and ragged hole is made, which is attributed to the spiral groove of the barrel, and the tightness with which this kind of ball fits the bore of the weapon. The wound made by the Prussian needle-gun, which carries a conical ball, differs from that made by an ordinary bullet.¹ It is quite insignificant in appearance, scarcely marked by suggillations, presents a slight contusion of the surrounding soft parts, is not always circular, and not unfrequently triangular, and in these slight marks gives but little indication of the complete disorganization which exists within. The orifice of exit is in all respects like that of entrance. In a case communicated by Mr. Tuffnell to the Surgical Society of Ireland (March 11th, 1854), it was shown that the form of the wound made by the conical bullet of the Minié rifle was "a small semilunar split in the integument," about a quarter of an inch in length. There was no contusion nor inversion of the edges of the wound.

§ 291. Mr. A. Neill, Assistant-Surgeon 65th Regiment, in an article on gunshot wounds in the Edinburgh Medical Journal, 1863, says: "The characters of a gunshot wound are those of a contusion and laceration of all the tissues. Sometimes they are so simple as to bear resemblance to a punctured wound, particularly if a rifle ball (conoidal), revolving on its long axis, has passed through the soft parts at a great speed; but within a few hours it resembles a contusion. The wound of entrance, as it has been termed, bears no comparison in size or shape to that of exit when a rifle-ball has caused the injury. In

¹ Casper, Ger. Med., i. 293.

the former you see the edges of the wound curving inwards, and the circumference small, with little or no hemorrhage. In the latter, the wound is large, with torn and irregular edges projecting outwards, and perhaps only slight oozing of blood. In a short time, averaging an hour, around the entrance wound slight redness begins, gradually extending to about two inches around its orifice. Again this color changes to a blue or greenish-black, and you see all the appearances of a severe bruise, with a small wound of the skin, its edges still curved inwards. In the exit wound the discoloration of the skin is not apparent."

§ 292. It is evident that one ball may produce several wounds upon the body; either, for example, by traversing a limb, and then entering the trunk or head, or, as has been witnessed in some instances, by the splitting of the bullet upon a projecting ridge of bone. At the same time, it should be remembered that the piece may have been charged with more than one bullet, and this circumstance may give rise to some perplexity, since, upon examination of the body, only one may be found, the other having passed out of the body, or been overlooked in the examination. Casper lays great stress upon the difficulty of finding balls in the body, even when there appears to be a certainty that they could not have traversed it, no aperture of exit being found.¹

A ball, after entering the skin, is deflected from its straight course by very slight causes.² Many examples of this fact are given by all authors on military surgery. The following is a singular illustration of it: In a duel with pistols between two students of Strasburg, one fell, apparently mortally wounded in the neck, but almost immediately got up, without feeling any inconvenience from his wound. It was found that the bullet had struck the larynx obliquely, and, glancing from the cartilage, had gone completely around the neck, and stopped on the opposite side of the larynx from where it had entered. It was taken out by making simply an incision over it. Other examples might be cited in which balls have made a circuit around the cavities of the body without entering them. In a wound of the head, thorax, or abdomen, the ball may make a half circuit of the body, and lodge or emerge at a point opposite that at which it entered, thus

¹ Ger. Leichenöff., 2tes Hundert.

² See *infra*, §§ 805-807; Whart. Crim. Ev., § 771.

leading one to suppose that it must have passed directly through. In the battle of Sudozam, a soldier was struck by a bullet just above the right haunch bone. The ball passed around the trunk, entered the abdominal parietes on the *left* side, then passed downward through the sciatic notch, and "at length contented itself with remaining in the left nates."¹

§ 293. *Wounds from small shot.*—These are too characteristic to be mistaken for any other injury. It is chiefly important to understand the character of the wound as affected by the *distance* at which the piece was fired. When this has happened sufficiently near to the person for the charge to enter the body in one mass before separating, the wound is of considerable extent and gravity. Its edges are ragged, contused and blackened; and as the shot diverge after entering the body, great laceration and injury of the parts underneath take place. Dr. Lachèse, of Antwerp, found, upon experiment, that for the opening to be single, the distance should not exceed ten or twelve inches. At distances greater than this, the wound will no longer be perfectly regular, but more or less lacerated; and when the distance is so great that no central wound is made, each grain will make a distinct though trifling wound. Nevertheless, a single grain of shot may occasionally produce death. Thus, in a case related by Ollivier d'Angers, a thief, scaling a wall, received, at the distance of fifteen paces, a charge of shot from a fowling-piece. He fell dead immediately. The charge had struck him in the breast, scattering over an extent of three to four inches, but one grain had penetrated the aorta over the attachment of the sigmoid valves, and another had traversed the anterior wall of this vessel. The wounds had the form of linear incisions, two lines in extent, and such as would be made by a fine double-edged and pointed instrument. If the shot have had to penetrate the clothing, especially if this be loose and thick, before entering the body, the usual character of a near wound from this cause will be modified; the shot is spread out of its course by this obstacle to a certain degree, and does not enter the skin in a mass, causing a round, tolerably regular opening, but being somewhat scattered, will either produce a large, lacerated wound, or a number of small wounds, according to the position in which the weapon is held.

¹ Cole's Military Surgery.

§ 294. 4th. *Wounds from wadding and gunpowder.*¹—According to some experiments made by Dr. Swift, it was found that a *pistol* loaded with powder and wadding alone, at twelve inches distance, tore the clothes and abraded the skin, without penetrating it; at half this distance, the wadding penetrated to the depth of half an inch; at two inches, a ragged and blackened wound was made, and the wadding was imbedded at the depth of two inches; at one inch and a half from the chest, the wadding passed between the ribs into the thorax, and in a second experiment carried away a portion of the rib.² M. Lachèse found in his experiment that the distance at which the wadding of a gun would enter the body in one mass, did not exceed six inches from the muzzle, but that even at this distance it only occurred when a double charge of fine powder was used, and with an army cartridge.³ Hence it is probable that an ordinary wadding, such as loosely wrapped paper, rag, or similar material, used in a fowling-piece, or in a musket by those not accustomed to the military use of the weapon, would not produce a rounded opening which would resemble that made by a bullet. Even if held at a less distance than six inches from the body, it is doubtful whether such a wound could be produced. Yet, although the opening may not be mistaken for that made by a bullet, it is certain that dangerous and fatal wounds are often made with wadding at short distances, by its penetrating the body and lacerating some important blood-vessel.

§ 295. A curious and interesting case, which led to experiments confirmatory of the above, occurred in Paris, in 1858. In the circus a cannon was fired in the direction of the boxes, at a distance of about 150 feet. The cannon was about four feet long, four inches in caliber, and loaded with three ounces of powder, retained by a wad made of old theatre bills torn from the street walls, loosely rolled together and rammed home with moderate force. On one occasion a man was seated in a box opposite the muzzle of the gun, and at the distance already mentioned; he was leaning forward, with his arms crossed upon the handle of his umbrella, and, as the explosion took place, he fell violently backward, and was afterwards found to have his arm broken above the elbow. Several portions of wadding were found

¹ As to injuries from wadding, see *infra*, § 851.

² Phil. Med. Exam., March, 1846.

³ Orfila, Méd. Lég., 4me edition, 2, p. 464.

upon the ground underneath the place where the man had sat; but no marks existed upon his clothing, and none upon the anterior part of the arm, which, indeed, must have been inaccessible to any projectile that did not at first strike the forearm. It was concluded that the fracture had been caused by the sudden and violent starting of the man backwards, which must have brought his arm against the hard edge of partition; and various experiments tried with the cannon proved that any wadding which could be made of paper was dispersed in pieces, or lost all power of mischief, at a much less distance than one hundred and twenty feet.¹

§ 296. *Gunpowder* alone is capable of producing wounds which may prove fatal. When a pistol or gun charged with gunpowder alone is fired at an uncovered portion of the body at a distance of a few inches, a blackened, burned and slightly lacerated wound will be produced, or if the grains of powder be large, the skin may present the appearance of having been struck with small shot. The burnt appearance of the skin, the singeing of the hair in the neighborhood, or the burning of a portion of the clothing, will all indicate that the charge has been fired close to the body.

III. *Homicidal, Suicidal and Accidental Wounds.*²

§ 297. The mode of obtaining a satisfactory solution of the question, whether a wound found upon a dead body was of accidental, suicidal or homicidal origin, is by an examination of the wound itself, and of the circumstances under which it was produced. Under the first head, the considerations are purely of a medical nature; under the second they are so to a limited extent only, and will, therefore, be more appropriately examined in connection with the legal remarks upon homicide. We shall allude to them, therefore, in this place only in a cursory manner.

1st. *Situation of the wound.*—*Suicidal* wounds are inflicted upon those parts of the body most accessible to the hand, such as the head, neck and anterior part of the trunk. They are usually either made by fire-arms, or by cutting instruments. If by the former, the wound will most frequently be found in the head, or over the heart,³

¹ *Annales d'Hyg.*, Avril, 1859, p. 420.

² On this question, see *supra*, §§ 272, *et seq.*, *infra*, §§ 835 *et seq.*

³ M. Brierre de Boismont states that in 297 out of 368 cases of suicide by fire-arms, the head was the part injured, and that in 71 only were the chest or the

and if by the latter, the throat is usually selected. If, therefore, a wound is found in some part of the body which it was manifestly impossible for the suicide to reach, this circumstance, in connection with the direction of the wound, will make the intervention of another or the occurrence of accident evident. Yet, as, in the greater number of cases, wounds exist upon the front part of the body, or at least in such situations that they could have been self-inflicted, the locality of the wound alone affords merely a presumption at most of its mode of origin. Moreover, it must be remembered, that all suicidal wounds are not inflicted always by means of the hand, but sometimes by violently striking the body against some solid substance, by precipitation from a height, and by various other means, especially in persons of deranged intellect, who not unfrequently contrive to mortally wound themselves in such a manner as would hardly be thought of by another.

Orfila relates a case, in which an insane person killed himself with a pistol-shot, fired behind the right mastoid process; the ball was found in the cerebellum.

§ 298. A woman in this city endeavored to destroy herself by placing her head upon a block and dealing upon the back part of it numerous severe blows with a hatchet. A similar instance is reported by Mr. Tarleton, in which an insane gentleman was found lying insensible in his kitchen with a cleaver by his side. Upwards of thirty wounds were found over the occipital bone; they were horizontal, many of them superficial, but one, however, had removed a portion of the skull from the middle of the lambdoidal suture, so that the brain had escaped. This person, who survived his injuries four days, admitted that he had inflicted them himself.¹ Suspicion of criminal violence would very naturally be entertained in such cases as these, provided the body was accidentally discovered in a deserted place.

§ 299. 2d. *Direction.*—The *direction* of the wound will more frequently serve to distinguish a homicidal from an accidental wound than from one which has been self-inflicted. Thus, on the trial of Mrs. Mackin, in Edinburgh, in 1823, for murder, it was stated in the evidence that the deceased died from a stab. The prisoner alleged in abdomen attacked. In 234 of the first group of cases the weapon was fired into the mouth. *Du Suicide*, p. 531.

¹ Taylor, Med. Jur., p. 191.

her defence that she merely held the knife in her hand sloping upwards, to deter the deceased from attacking her; but that he, being drunk, stumbled forwards upon it. This statement was disproved by the medical testimony, which showed that the *direction* of the stab was backwards, and very much downwards in the lungs, having penetrated the chest over the cartilage of the second rib.¹ A similar instance is given by Elvert, in which the downward direction of the wound, and its having been made in the manner of the German butchers, viz., a second internal wound after a partial withdrawal of the instrument, not only disproved the accidental origin of the wound, but indicated also the occupation of the murderer.² In England, a few years since, a murder was fixed upon a man, from the fact that the wound in the neck of the deceased had been evidently made by a knife cutting from within outwards, as is done in slaughtering sheep.³

§ 300. The direction of suicidal wounds is subject to too much variety to be relied upon as a criterion, for although in many cases we may obtain from it a presumption that the wound was voluntary, yet it is evident that a wound inflicted by a murderer may assume any direction which could possibly be given to a suicidal wound. Besides, the deceased may have been left-handed, or ambidexter, a consideration of some importance in this relation. In short, but little information of value can be obtained from the direction of a wound, unless the circumstances under which it was received are known; hence, its chief importance is in corroboration of other evidence.

In any case in which a person is found lying dead or dying from wounds or other bodily injuries, an accurate inspection of the locality, and of the position of the body in respect of surrounding objects, is of the highest importance, and should be minutely noted before the body is removed.

§ 301. That part of the *circumstantial evidence* which requires medical knowledge for its elucidation, is often most curious and important, and as it has to deal with conditions incessantly varying, and is founded upon no familiar principles, nor any positive scientific basis, but rather upon loose and badly observed facts, must partake of the same nature, and often appear discordant and improbable. Each

¹ Christison, Month. Journ., Nov. 1851, p. 401.

² Kopp's Jahrb., i. p. 143.

³ The uncertainty of the inferences to be drawn from the course taken by shot in the human body, is discussed in Wh. Cr. Ev., § 771; *infra*, §§ 807-809.

medical witness may put together in a different manner the materials with which he is required to reconstruct the scene immediately preceding death ; and a successful result will most naturally reward him, who with the most acute perception unites the largest and most familiar acquaintance with similar facts. In estimating the probabilities in reference to the manner of death, the physician has need of all aid which a general observation of the workings of the human mind can afford him, his psychological knowledge and his medical experience must here go hand in hand, for it is his task and duty to offer an explanation of the mutual dependence of motives and results, and that, in the same disinterested and merely scientific manner, that would be required in the demonstration of any curious fact in physics.¹

That portion of the indicatory evidence upon which medical testimony may possibly throw some light, we may now cursorily allude to.

§ 302. 3d. *Position of body and of weapon.*—The *position of the body and that of the weapon* (if the latter be found) sometimes throw light upon the mode of death.²

These two circumstances serve also generally to explain each other ; separately considered they are not of so much importance. In cases of suicide the weapon may be found grasped in the hand or not, according to the manner of death. Thus, if death ensue upon sudden and abundant hemorrhage, as in wounds of the throat, stabs in the heart or great vessels, the person dies by syncope, and hence, the hand being relaxed, the weapon falls from it. When, however, death is occasioned by a pistol-shot through the head, the weapon will, in most cases of suicide by this means, be found firmly grasped in the hand. In other cases where death has not been immediate, it is purely a matter of accident whether the weapon be still held by the deceased or not. In like manner, the position of the body will be affected by the suddenness and mode of death. Where death is sudden, the body will usually be found lying upon the back, but if it have not been immediate, the face and trunk will generally be turned to the ground. The position of the body alone cannot be considered as indicative of the voluntary, accidental or homicidal character of the injury, but if it be found in a position indicating immediate death from hemorrhage or from the instantaneous loss of

¹ See as to Medico-Legal Examinations, *infra*, §§ 700 *et seq.*, as to experts, §§ 890 *et seq.*

² See on this topic in its legal relations, *infra*, §§ 845 *et seq.*

muscular power, and the weapon be found at a distance from it, the act may be considered in all probability as homicidal. Where, on the contrary, it is found in this position and the weapon by which death apparently was caused lies close to the body, it is impossible of course, to determine whether it has been placed there by another after assassination or has fallen from the hands of the suicide. Should the weapon be found firmly grasped in the hand of the deceased, there can be little doubt that the act was suicidal. The only objection which can be made to the supposition is, that it might have been placed in the hands of the person before life was extinct, and instinctively grasped by him. No case, however, is yet reported which would show that this has been done. Where after death by assassination a weapon is placed in the hand of the victim, it cannot be forcibly grasped, but will lie there loosely. Sometimes the fact of the razor being shut (when this has been the weapon used) has been considered as indicative of homicidal interference; but such an inference is not justifiable, unless it can be shown from the position of the body and the character of the wounds, that death must have been instantaneous, and even here the question might naturally arise whether the fall of the razor to the ground might not sufficiently account for its being closed. Thus, for example, in a case of suicide related by Dr. Casper, the man, after having first inflicted with a razor, some superficial wounds at the bend of both elbows, stood before a mirror and, drawing down his cravat, cut his throat in an oblique direction from left to right, dividing the larynx and both external jugular veins. The razor was found bloody and *closed*, two feet distant from the body.¹ The same author reports another case of suicide by a pistol-shot in the breast, traversing the diaphragm and spleen, and subsequent drowning. In this case the pistol was found in the pocket of the deceased, and the fact of its having been fired against the naked chest was shown by the circumstance that his coat and shirt were not perforated, and the former was buttoned up to the chin.

§ 303. The following case illustrates the nature of the difficulties which sometimes environ the questions treated of in this chapter. At Paris, in 1858, an auctioneer and appraiser, thirty-one years of age, arrived at the Lyons railroad station, about six o'clock in the

¹ Gericht. Leichenöff. 1 tes Hund. p. 17.

morning, and having engaged a coupé and placed his luggage upon it, entered the vehicle, carrying a double-barrelled fowling-piece in his hand. At some previous period he had been twice convicted of official misconduct, and his present position was not a prosperous one. But there was nothing to indicate his being humiliated or desperate; on the contrary, his habitual behavior was gay and even frivolous. On the way to its destination an explosion was heard in the carriage; it was stopped, and the body of the occupant was found seated in the left-hand corner, the legs crossed, and in the posture of a person seeking repose. The greater portion of the left side of the skull from the centre of the forehead was carried away; the legs were crossed, and between them lay a cane and a double-barrelled gun, the left barrel of which was still loaded and cocked. The thumb and index finger of the left hand were bloody, and the fingers clenched. Within the skull were found numerous grains of shot. The deceased had, several months before, insured his life for about \$30,000, which sum the insurance company refused to pay to his family, on the ground that his death was suicidal. Hence a lawsuit, in which the facts of the case were investigated. It was evident that at the moment of the explosion the forehead must have been upon or very near the muzzle of the gun, which was also grasped by the left hand. From these facts, M. Tardieu concludes that the death was suicidal,¹ and M. Brierre de Boismont draws the same inference, chiefly from the fact that there was *no* evidence of a previous inclination to this crime.² The court, however, condemned the insurance company to pay the amount of its policy. To us it seems perfectly natural that a sportsman, weary with a night's ride in a railroad car, should, when seated in a hackney-coach, have leaned his head upon the muzzle of his gun, embracing but not covering the end of the barrel with his hand, and that a jolt of the vehicle should have caused the trigger to catch in his pantaloons and explode the charge. Too many accidents of a similar nature have occurred, displaying an almost inconceivable negligence of the simplest precautions in handling firearms, for us not to adopt this conclusion in the present case as not only the most charitable, but also the most logical.

The inference to be drawn relative to the suicidal or involuntary cause of death, from the various other circumstances under which

¹ Ann. d'Hyg., Avril, 1860, p. 443.

² Id., Juill. 1859, p. 138.

the body is found, do not belong to the physician, and require in general no medical knowledge for their explanation. This portion of the indicatory evidence is treated of in the legal part of this subject.

IV. *Blood-stains.*¹

§ 304. 1st. *General appearance.*—The color of stains of blood is dependent upon their age and the materials upon which they are found. Those of a recent origin are of a deep red color, which ultimately becomes brown. The period required to effect this change is not determined; it occurs, however, most rapidly in warm weather. The recent stains of menstrual blood are also of a brown color. The depth of the color depends also upon the porosity of the substance. Thus marks of blood upon white stuffs and upon light wood are paler and duller than those on articles of greater density, as varnished wood, iron and stone. Where it has coagulated, this will usually be shown by one portion of the spot being thicker and darker than the other.

§ 305. On colored stuffs, especially on those which are brown, blue or black, the spot is more easily recognised by candle-light than by day. This important fact was discovered by Ollivier d'Angers. He had been directed to re-examine the room of a person accused of murder; having already visited it in the daytime, his second examination was conducted at night, and he now discovered by holding a lighted candle near to the paper hangings, which were of a pale-blue color, a number of drops of an obscure dirty-red, which by day had the aspect of small black specks, and were lost in the general pattern of the paper. On a further examination, other spots of the same kind were found on the furniture. On the chimney jamb, which was painted blue, there was a large stain of blood, which appeared red by the light of the candle. The next day by daylight Barruel and Lessueur could not find these spots, and were obliged to make use of artificial light to discover them.² The same remarks will of course apply to spots of blood upon dark woollen cloth, in which they can also be detected by the stiffening of the material. If the stain be upon a weapon, such as the steel blade of a knife or poniard, the color will be of a pale-red where the layer is thin, and of a dark-brown color where it is of greater thickness.

§ 306. 2d. *Chemical examination of suspected stains.*—If the stain

¹ See *infra*, § 822.

² Briand, Méd. Légale, p. 782.

be upon linen or other similar stuff, it should be cut out and suspended by a thread in a small test-tube containing an amount of distilled water sufficient fully to dissolve the stain ; the coloring matter of the blood soon begins to detach itself and seek the bottom of the vessel, the supernatant liquid remaining tolerably clear. The coloring matter will be dissolved in the course of a few hours ; the fibrin, if any were contained in the spot, remaining attached to the stuff as a soft-grayish or rosy white substance. The colored liquid in the test-tube may now be subjected to various tests ; but one or two very simple ones are all that is necessary to establish the certainty of the presence of blood. Supposing the liquid to hold in solution the coloring matter of the blood and albumen, the effect of heat carried gradually to the boiling point is to coagulate it and destroy its color. According to the amount of albumen, will be the degree of coagulation, if the liquid contain merely a trace of it, boiling merely renders it opalescent. But the alteration of color is peculiar to blood. It changes from its more or less red color to a grayish-green without a trace of red, the upper-portion of the liquid acquiring also an indistinct yellow tinge. The grayish coagulated portion may be redissolved with potassa, and acquires thereby a brownish-red color by refracted, and green by reflected light. Another important test for blood is the absence of any change of color by the addition of ammonia, except when very concentrated or added in large quantity.¹

§ 307. These tests will suffice to distinguish the colored serum of the blood from any stains resembling it. Thus the red soluble dyes or stains from the juices of fruits are not coagulated by heat, nor do

¹ Rose's method is thus given by Casper (*op. cit.*, i. 160) : The dried blood is thoroughly treated with cold distilled water, which is from time to time poured off from the undissolved fibrin until all the coloring matter is removed. The residual fibrin can then be examined with the microscope. If the coloring matter in solution is now treated with chlorine water in excess, it becomes decolorized, and white flakes separate and float upon the liquid. Three parts of nitric acid to one part of the solution give a grayish-white precipitate, and four parts of tincture of galla to one of the solution give a pale violet precipitate. If a portion of the solution is boiled it is coagulated in a greater or less degree. The clot is of a dirty red color, dissolves readily in a heated caustic solution of potassa, to which it gives a greenish tint by transmitted light, and, as before stated appears brownish-red by refracted light. When a very small quantity, as a single spot of blood is examined, all of these reactions cannot be observed. In this case it is advised to boil the solution and treat it with caustic potassa, afterwards adding an excess of chlorine water or of nitric acid.

they lose their color on exposure to it, but the red color is changed either to a crimson or to a green, sometimes passing through a violet shade by the addition of ammonia. M. Raspail's statement, that a stain possessing similar chemical characters with that of blood, could be formed by exposing to heat a mixture of madder and white of egg, has been corrected by Orfila,¹ who, in fact, denies its accuracy. He found that a solution of this artificial stain, although coagulated by heat, preserved its orange-red color, and the coagulum was of a pale red. In its further reactions, also, it was quite dissimilar to blood. Dr. Taylor says: "Having for some years performed numerous experiments on this subject, by making artificial mixtures of human serum or animal albumen, with the red coloring matters of cochineal, lac, and madder, and neutralizing the effects of the alkali contained in the serum by the addition of a small quantity of acetic acid, I feel justified in stating that in no respect whatever, except in regard to color, can such mixtures be confounded with blood. The objection is, therefore, more theoretical than practical. These red liquids may easily deceive those who trust to a *red color* alone; and herein we see the necessity for placing the investigation of such subjects in the hands of professional persons only."

§ 308. *The guaiacum process for the detection of blood.*—Dr. John Day, of Geelong, Australia, was the first to demonstrate the proper method of using the guaiacum test for the detection of blood-stains. The mode of employing it is as follows: "Wet the blood-stain with *freshly prepared* tincture of guaiacum, and then add a small quantity of ethereal solution of hydroxyl. To prepare the tincture of guaiacum, wash the tears of guaiacum resin first with a little alcohol, and then dissolve the pure unoxidized resin by shaking up with a little fresh spirit. The *ethereal solution of hydroxyl* is prepared by mixing together equal parts of ether and hydroxyl. The ether is not, however, necessary for the reaction. If the stain be blood, a characteristic blue tint will be produced.

"If the material stained be of such a color as to obscure the reaction, add the several reagents, and afterwards press the fabric between two pads of white blotting-paper, when the blue color will be absorbed by the paper. A number of impressions may in this manner be obtained, and the reaction be rendered apparent.

¹ Méd. Lég. ii. 618; *infra*, § 822.

"If the blood be fresh, the reactions may be obtained by simply treating a solution of the coloring matter in cold distilled water with the guaiacum and hydroxyl. To detect blood in urine, the following process has been suggested: Mix together in a test tube equal parts of turpentine and tincture of guaiacum. Then add the urine, so that it may flow to the bottom of the tube. The guaiacum, which now separates if blood be present, becomes of an intensely blue color.

"In this test the blue color results from the oxidation of the blood. But it is important to note that guaiacum is blued by a number of substances, such as gluten, milk and the fresh juice of various roots and underground stems (horse radish, colchicum, carrot, etc.), also by nitric acid, chlorine, the chlorides of iron, mercury, copper and gold, the alkaline hypochlorites, and a mixture of hydrocyanic acid and sulphate of copper. Also by pus, saliva and mucus mixed with carabolic acid or creasote."¹

Dr. Taylor, however, remarks that the fact that guaiacum is blued by contact with these substances should be no objection to the test, for blood is not blued by guaiacum alone. It is only after the addition of hydroxyl that the blue color appears.

It would not be safe to depend upon the guaiacum test alone, but as corroborative evidence this test is one of the most convenient and reliable known.

In practice it is best to first take a fragment of the suspected stain and subject it to the guaiacum test. Should this indicate, by the blue color, the presence of blood, then the microscope and spectroscope may be used to examine the remainder of the stain.

§ 309. When the spot of blood is upon a hard substance, it may, in most cases, be removed by careful scraping. If upon the point of a weapon, it may be macerated for a short time in a narrow vessel containing water, but if on any other part, if not easily removable by scraping, as when the blood has dried in a film or in streaks, the stained part should be laid upon a clean plate of glass, after having been previously moistened with distilled water. The two surfaces should be in immediate contact with each other, but care should be used that the metal be not left too long exposed to the action of the water. Blood-stains upon iron and steel may sometimes be mistaken for *rust* or salts of the oxide of iron made by some of the *organic*

¹ Tidy's Legal Medicine, vol. i., p. 221, Philada. H. C. Lea's Son & Co., 1882.

acids. In the case of rust the color is different, being more or less yellow, but occasionally this distinction is not sufficiently evident. If, however, the spot be detached and placed in distilled water, it does not dissolve, although part of it may remain suspended in the water. By filtration, however, the rust is entirely separated, the filtered liquid remaining colorless. The residue upon the filter will give the proper reactions with the ferrocyanide of potassium or the alkalies, after having been first digested with dilute hydrochloric acid. If, however, the stain be due to lemon-juice or other organic acid, it will be observed in the first instance that the color is darker than that of blood, being often nearly black; it is also very soluble, and although slightly coagulable, the solution yields at once to the tests for iron, giving an intense blue color with the ferrocyanide, and a deep red with the sulphocyanide of potassium.¹

§ 310. There are a number of insoluble stains which present a certain similarity to those of blood. Such are, madder and logwood dyes, iron moulds, and red paint. The insolubility of these stains ought to be a sufficient indication of their being due to some other cause than the presence of blood. The coloring principle in madder is, however, rendered yellow by acids and violet by alkalies, a change which of course will not be produced in a spot of blood.

§ 311. Still, the spot may be *soluble*, and yet not be due to blood. In some cases stains, somewhat similar to blood-stains, are made by

¹ Dr. Carl Schmidt, Diagnostik der verdächtigen Flecke in criminal Fällen. Leipzig, 1849.

The detection of blood-stains upon iron is difficult, but important. Vauquelin was the first to remark that iron rust upon domestic utensils and instruments contains ammonia, hence, if on being heated it yields ammonia, this is no proof of the presence of blood. If this experiment is performed with a gentle heat upon iron rust in a glass tube, and if after the ammonia is driven off the heat is increased, a peculiar odor, such as always attends the carbonization of albuminous substances, is exhaled, and a brown, offensive, empyreumatic oil is deposited on the less heated portions of the tube. Still stronger evidence is afforded by the following test: Melt a small quantity of the slightly heated rust with an equal volume of potassium or sodium in a very small glass tube closed at one end; when cool, mix with water, filter, and decompose the liquid with a very small quantity of a solution which contains both the protoxide and the peroxide of iron, and saturate the whole with an excess of hydrochloric acid. If blood be present, a greater or less quantity of prussian blue will be developed, but if the ferruginous solution is in too great quantity, the color will be green. (Casper, loc. cit.)

the juices of fruits, or by soluble coloring matters. Dr. Albert found, on the clothes of a young man accused of attempted assassination, a large number of red spots which had the appearance of blood. On examination, however, he found that a portion of them only were caused by blood, and the rest by red chalk, the prisoner's trade being that of a wall-colorer. All the stains were soluble, but those which were really due to blood were distinguished from the others by their more shining appearance, the appearance of fibrin in the solution, which sank to the bottom, the want of change upon the addition of caustic ammonia, and their appropriate reaction with nitric acid and with tincture of galls. The spots made by the red chalk disappeared in a fine powder on being rubbed, communicated their color uniformly to the water, and the solution was changed to a violet-brown color by caustic ammonia, dark brown by nitric acid, and remained unchanged upon the addition of tincture of galls.¹

§ 312. If the suspected stain on the clothing be caused by *iron rust*, it will be readily dissolved out by hydrochloric acid, and then may be subjected to the appropriate tests. Dévergie reports an instance in which iron mould awakened considerable suspicion of violent means having been used. The body of a young man, bearing the marks of many injuries upon it, was taken out of the Seine, where it was supposed to have lain for three weeks. Red stains were found on the shirt, which were supposed to be of blood, but, upon examination, they were satisfactorily proved to have been due to the rusting of a steel guard-chain and a bunch of keys on the person of the deceased. Dr. Taylor gives an instance in which spots of *red paint* upon the dress of an individual, were the occasion of his being arrested on suspicion of being concerned in a murder which had been perpetrated shortly before. The color in this instance was due to the peroxide of iron, which was readily detected.

§ 313. The distinction of *arterial* from *venous blood*, except when recently effused, is manifestly impracticable. Their chemical reactions are very nearly alike, and the only ground of distinction is in the more florid color of the former when recently poured out, and occasionally also in the form of the spots; those made by arterial blood being generally of an oval or elongated shape, in consequence of the blood having been thrown in a jet from the divided vessel.

¹ Henke's Zeitschrift, 1855. H. ii. p. 392.

Moreover, in practice the two kinds of blood will almost always be mingled together, as it is difficult to conceive a wound being made which shall not involve both sets of vessels. Dr. Taylor makes some interesting observations on the form and direction of spots of blood, suggested by the case of *Reg. v. Spicer*.¹ "At the top of the stair, and at the height of four or five feet above the level, several spots of blood were observed upon the brick wall, which was whitewashed. The spots took an oblique direction from above downwards, were of a pale-red color at the upper part, but dark-red below, terminating in a point consisting of the fibrin, and the greater part of the red coloring matter. Their form and regularity proved that they had proceeded from a small artery, and that the wounded individual could not have been very distant from the wall, while their shining lustre rendered it probable that they were of recent origin, and their well-defined termination in a firm coagulum showed that they had proceeded from a living blood-vessel. The deceased had died from fracture of the skull and vertebral column, by a fall from the top stair; one branch of the right temporal artery was found divided, and this wound could not have been produced by the fall. It was, therefore, evident that a murderous assault had been made upon her at the top of the stairs; this had led to the spitting of the arterial blood on the brick. The height at which the spots existed, and their appearance, proved that the jet of blood had been from above downwards; thereby rendering it probable that the deceased was standing up, or that her head was raised at the time the wound was inflicted. Further, as the brick with the spots was on the left hand in the descent, and the wounded artery was on the right side, it is probable that the deceased was face to face with her assailant in the act of ascending the stairs, and that she was killed by being precipitated to the bottom."² It has been supposed that *menstrual* blood could be distinguished from other kinds by the absence of fibrin; but, although this discharge does not usually coagulate, it nevertheless contains fibrin and sometimes in very appreciable quantity. Dr. Franz Simon says: "There can be little doubt that there is fibrin in the menstrual secretion; its determination is, however, usually rendered impossible by the presence of a large amount of mucus,

¹ Berk's Lent. Assizes, 1846.

² Med. Jur., p. 203. See also case of *Drury*, by the same author. Guy's Hospital Rep., vol. vii. 1851.

which seems to deprive the blood of its power of coagulating."¹ M. Robin has given as characteristic qualities of menstrual blood, that it contains, besides blood-disks, epithelial cells and globules of mucus (leucocytes);² but the latter elements are wanting whenever the menstrual flow is excessive, and in such cases, therefore, the liquid presents no distinctive characters.

§ 314. The presence of fibrin in a blood-stain is merely corroborative proof of the origin of the spot, but does not indicate with any certainty that the stain was derived from the blood of a living person; nor, on the other hand, does its absence give any support to the opinion that it was derived from a body already dead, since, if the stain be superficial, it may yield no traces of fibrin, even though it came from a living vessel, and coagulation in a dead body is not complete immediately upon the extinction of life. Hence, if the physician be able clearly to discover the traces of blood by the reactions of the colored serum before indicated, it is superfluous to inquire for the presence of fibrin; and, on the other hand, this element of the blood could hardly be detected without ample proof of the nature of the fluid having been already obtained from other sources, since the quantity required would be considerable.

§ 315. The discrimination of the *blood of animals* from that of *man* by chemical means, is too uncertain to be used as evidence. M. Barruel has stated that, if one-third or one-half its volume of pure sulphuric acid be added to blood and agitated, a peculiar odorous principle is evolved, resembling that of the animal from which the blood was derived. Thus, human blood is said to give off an odor of perspiration; that of the cow, horse, sheep, pig, etc., a smell recognised as peculiar to the animal. M. Barruel claims to have discovered this property even in blood which had been dried. According to Schmidt, the experiment succeeds only with the blood of the ram, sheep and cat. But more recently, an experiment was made by MM. Tardieu, Barruel and Chevalier, which shows how little confidence can be placed in this test. These experts were charged with the duty of determining whether some blood found in the cellar of a woman accused of murder was human, or, as she alleged, that of a sheep. Being undecided in opinion, they procured the blood of sheep, oxen and of the living and dead human subject, and these, with the blood

¹ Animal Chemistry, Syd. Soc. ed., p. 338.

² Ann. d'Hyg., 2ème sér., x. 421.

from the cellar, and that upon the clothes of the accused, were placed in separate test-tubes by an assistant, and numbered. Sulphuric acid was then added to each, and the mixture stirred. Each expert was required to write secretly his opinion as to the source of the blood in each glass. The result was the greatest confusion, the human blood being constantly mistaken for that of the animal, and a correct opinion seemed only to be obtained by chance.¹

§ 316. 3d. *Microscopical evidence.*—An additional and valuable means of detecting the presence of blood in suspected stains, is by the microscope. If the spots are recent (a week old, for example), three to six hours are sufficient to disaggregate the mass of globules, but a solution of the sulphate of soda penetrates very slowly those which are old, and several days may be required for this purpose. When the tissue has been well soaked, the stains may be carefully detached with a scalpel, and the liquid thus removed should be placed upon a glass slide, and immediately covered with another one. Upon examining a blood stain thus prepared, many other objects will be seen besides the blood-globules, such as filaments of tissue, etc., but the observer should abstract his attention from these, unless there is reason to suppose that they may indicate the locality from which the blood came, as in the case of mucus, etc., in attempts at rape. A portion of the globules will be found free, while others will be attached to the fibres of the stuff, but they will preserve their natural color, volume, and, more or less, their shape also, to such an extent, however, as to be readily recognised.² The microscopical characters of spots upon woollen cloth are less easily recognised than those on linen, hemp or cotton. The investigation should, of course, be conducted only by one familiar with the use of the microscope. If this be done, there can be no hesitation in saying that the results will be fully as valuable as, and open to fewer objections than, the chemical tests.

§ 317. The stain to be examined should be treated with a solution of sulphate of soda or of white sugar, in order to preserve the natural shape of the blood-corpuscles.³ If the stain have been previously

¹ Casper's *Vierteljahrsschrift*, 1854, H. i. p. 120. See also Henke's *Zeitschrift*, 1855, II. ii. p. 392, for a number of experiments made with a similar result, by Dr. Albert of Euerdorf.

² Robin. Briand, *Méd. Lég.*, p. 790.

³ The following solvents have also been recommended: Glycerine 1 part

washed, it is very possible that the microscope will afford only negative results ; but whenever it is possible to recognise distinctly even a single blood-disk in the liquid examined, this is quite sufficient to attest the presence of blood. Dr. Taylor says he has obtained "clear evidence of their existence in, and separation from, a minute fragment of dry blood, which had been kept in a dried state for a period of three years." M. Robin detected them in spots from eight to twelve years old. But such certainty cannot be expected if the spots have been washed, or if, while fresh, they have undergone putrefaction. Sometimes, when the red corpuscles cannot be detected it may be possible to distinguish the *lymph-globules*, which are larger than these, but few in number, and colorless. Professor Wyman says that when blood is allowed to dry in masses, he has failed to detect the presence of the blood-disks. "The lymph-globules, on the contrary," he says, "may be softened out after they have been dried for months, and their characteristic marks readily obtained." He found it easy to detect them in blood which had been dried six months.¹ Virchow also states that they resist being dried and moistened anew better than any other constituent of the blood.² Still, they are much fewer in number than the red corpuscles, and, according to the best authorities, not in greater proportion than 1:400.³ Virchow lays great stress upon their presence in blood subjected to medico-legal examination, on account of their power of resisting the influence of desiccation and subsequent moistening, and further, because their presence may confirm a doubtful opinion regarding the existence of red corpuscles in the spot examined. Much will depend, however, upon their number, for, if it should equal that of the red corpuscles, or nearly so, they must be regarded as belonging to pus rather than to blood. The possibility of their number being explicable by leukæmia or leucocythemia, a disease in which they may become one-third as numerous as the red corpuscles, is also to be borne in mind.

§ 318. The red corpuscles of man have an average diameter of

and water 7 parts ; a half per cent. solution of common salt ; a 32 per cent. solution of potassic hydrate ; a chloral hydrate solution, 1 to 10 of water.

¹ Statement by Prof. Wyman in Bemis's Webster Case, p. 90.

² Archiv, xii. 335.

³ See Kölliker, *Mikroskopische Anatomie*, Bd. ii., p. 576.

$\frac{3}{5}$ of an inch, and this size is not affected by age, being the same in the young and the old. They have a flattened shape, depressed centre and circular outline. These characters suffice to distinguish them from those of birds, fish, and reptiles, in which creatures they are of an oval or elliptical form, and have a distinct central nucleus. They have the same shape also in the camel tribe. But the globules in all the mammalia (with this exception of the *camelidae*) are so nearly alike in size and other characters to those of man, that, practically, no distinction can be made. Thus, the blood of an ox or of a sheep cannot by the microscope be, for medico-legal application, distinguished from that of a human being, for although the globules are somewhat smaller than those of human blood, yet the size of the globule of human blood varies according to whether it is fresh or dried, and the difference between its size in man and animals is too slight to be made a point of evidence in cases where such momentous consequences may depend upon the decision.¹

¹ For the comparative size of the blood-globules in man and animals, the reader may consult with advantage Kölliker's *Mikroskopische Anatomie*, Bd. ii., p. 580; Briand, *Manuel Pratique de Méd. Lég.*, 781; Todd and Bowman's *Physiological Anatomy*, part iv. p. 299; C. Gulliver on the size of the red corpuscles of the blood in the vertebrata, in the *Proceedings of the Zoolog. Soc.*, ciii. 1842; R. Wagner, *Beiträge zur vergl. Physiologie des Blutes*, i. 1833, ii. 1838; *Partium Elementarum Mensiones Micrometricæ*, 1834. Carl Schmidt has also conducted such measurements with great industry (see an excellent paper upon blood stains by Dr. Fleming, *Am. Med. Sci.*, Jan. 1859, p. 110), but his results, while they show a considerable average difference between the size of the human blood-globule and that of various domestic animals, are still insufficient to be brought in evidence in the decision of medico-legal questions. This also is the emphatically expressed opinion of Virchow and of Brücke. (*Virchow's Archiv*, xii. 336.) The measured diameter of the blood-corpuscles in man varies from $\frac{2}{3}$ of an inch to the $\frac{1}{2}$, $\frac{3}{5}$ being the average. The average thickness is $\frac{1}{24}$ of an inch (Tidy.) In the dog the average is $\frac{3}{5}$. In the hare $\frac{3}{5}$, in the mouse $\frac{1}{8}$, in the ass $\frac{1}{2}$, in the rabbit $\frac{1}{2}$, in the pig $\frac{1}{2}$, in the ox $\frac{1}{2}$, in the cat $\frac{1}{2}$, in the horse $\frac{1}{2}$, in the sheep $\frac{1}{2}$, in the goat $\frac{1}{2}$. (Gulliver.)

In the following case of presumed infanticide, in which a medical expert was required to determine the nature of some spots found upon a towel (described as having served to envelop the child) which was found concealed under a threshing floor, the reader will perceive the nature of the investigation sometimes required:—

(1) The towel was of coarse huckaback, quite rotten, as a year had elapsed since it was concealed in the locality in which it was discovered, and the letters

§ 319. The application of the higher powers of the microscope, and especially the use of immersion lenses, has of late years enabled observers to widely extend the field of medical jurisprudence in regard to the examination of blood-corpuses in dried stains.

§ 320. Dr. J. G. Richardson, of Philadelphia, who has investigated most thoroughly the size of the corpuscles in different animals, concludes that it is possible to decide with certainty whether the corpuscles in a suspected fragment of blood-clot belong to man or to certain of the lower animals. This can be done only by very high powers of the microscope, those magnifying from 1200 to 1800 diameters.

The animals whose blood-corpuses are notably smaller than those of man are those which are commonly slaughtered for food, such as the ox, sheep, or the pig, and birds, as for instance chickens, ducks, etc.

J. E. A., 20, were marked in red cotton upon one corner. It was very much torn, and full of holes.

(2) In one corner *three spots* of a dark-red color, resembling blood, were found.

(3) On another portion of the towel numerous large spots of a *dark-green* color were seen, resembling dried meconium. The texture of the cloth was so penetrated with this matter that even upon the opposite side it was slightly tinged with green.

(4) Spots of various sizes, of a *grayish-yellow* color, were found on other parts of the towel. These spots were dry, and could be detached in scales.

(a) The red spots were cut out and softened in some fresh liquor amnii. and revealed upon examination by the microscope, all the characteristics of human blood.

(b) The portions discolored by the green material were also cut out and placed in distilled water, others in alcohol. These solutions, when treated with concentrated sulphuric acid, and a few drops of a solution of sugar (according to Pettenkofer), gave traces of a *violet* color, which was considered to indicate the presence of bile.

(c) Some of the same spots, dissolved in liq. amnii, and examined by the microscope, were found to consist of biliary cells, cylindrical epithelium, and fatty crystals.

(d) The *grayish-yellow* stains, being prepared in a similar manner, exhibited epidermic cells, and cells from the sebaceous follicles. Hence it was inferred that the various discolorations upon the towel arose—1. From blood; 2. From the secretions of the liver and intestines; and 3. From the cutaneous secretion; and that they could all be explained on the supposition of a new-born child having been wrapped in it. It was further supposed, from the ragged condition in which the cloth was found, that it had been torn by some animal which had carried away and devoured the body of the child.—*Wistrand Hygied*, Bd. xiv. p. 220.

Dr. Richardson's method of demonstrating the difference between the blood-corpuscles of man and those of the various domestic animals is as follows: "Place near the upper right-hand corner of a microscope slide a small drop of fresh human blood, and then with a narrow strip of glass or metal spread a thin streak of it diagonally across the glass, towards the lower left-hand corner. Next let fall a drop of pig's blood, for example, upon the upper left-hand corner of the glass, and spread a similar narrow stripe so as to cross the first one, at a very acute angle, forming a figure resembling an elongated capital X. On each side of the meeting-point of the two lines will be found (should the experiment succeed) areas, when the two kinds of blood-corpuscles are in the same field of the microscope and so placed as to afford excellent opportunities for direct comparison of their magnitudes."¹

By means of micro-photographs, Dr. Seiler, of Philadelphia, has been able to reproduce side by side human and pig's blood-corpuscles. (Philadelphia Medical Times, Feb. 19, 1876.) In a case of child murder tried at the Cornwall Summer Assizes, 1871, the prisoner, who was indicted for the murder of her child, stated that some blood found on certain clothing was fowl's blood. The medical witness examined the stains by the microscope, and found that the corpuscles had not the oval form of those of the blood of a bird, but he was unable to say whether they were human or animal.²

Should the fragment of blood clot to be examined be very small Dr. Richardson has devised the following ingenious method of testing it:

"Procure a glass slide, with a circular excavation in the middle, called by dealers a 'concave centre,' and moisten it around the edges of the cavity with a small drop of diluted glycerin. Thoroughly clean a thin glass cover about one-eighth of an inch larger than the excavation, lay it on white paper, and upon it place the tiniest visible fragment of a freshly-dried blood clot (this fragment will weigh from one twenty-five-thousandth to one fifty-thousandth of a grain). Then with a cataract-needle deposit on the centre of the cover, near your blood spot, a drop of glycerine about the size of this period (.), and with a dry needle gently push the blood to the brink of your micro-

¹ American Journal of Microscopy. June 1881.

² Taylor's Medical Jurisprudence, eighth American edition, p. 308.

scopic pond, so that it may be just moistened by the fluid. Finally, invert your slide upon the thin glass cover in such a manner that the glycerined edges of the cavity in the former may adhere to the margins of the latter, and, turning the slide face upwards, transfer it to the stage of the microscope.

"By this method, it is obvious, we obtain an extremely minute quantity of strong solution of hæmoglobin, whose point of greatest density (generally in the centre of the clot) is readily discovered under a one-fourth-inch objective, and tested by the adjustment of the spectroscopic eye-piece. After a little practice it will be found quite possible to modify the bands by the addition of sulphuret of sodium solution, as advised by Preyer.

"In cases of this kind, where the greatest possible economy or even parsimony of material is needful, I would advise the following mode of procedure for proving and corroborating your proof of the existence of blood, so that its presence in a stain may be affirmed with *absolute certainty*.

"From a suspected blood spot upon metal, wood, leather, paper, muslin or cloth, scrape with a fine sharp knife two or three or more minute particles of the reddish substance, causing them to fall near the middle of a large thin glass cover. Apply in close proximity to them a very small drop of three-fourths per cent. salt solution, bring the particles of supposed blood-clot to its edge, and proceed as I have already directed.

"After thus examining the spectrum of the substance, you may generally, by rotating the stage, cause the colored fluid to partly drain away from the portion, wherein, under favorable circumstances, should the specimen be blood, the granular white blood-globules become plainly visible, as do also cell-walls of the red discs. Among the latter, if your mental and physical vision is keen enough, you can by the aid of a one-twenty-fifth immersion lens and an eye-piece micrometer measure a series of corpuscles accurately enough to discriminate human blood from that of an ox, pig, horse or sheep.

Lastly, to make assurance triply sure, lift up the thin glass cover, wipe off the tiny drop of blood-solution and clot you have been examining on the folded edge of a thin piece of moistened blotting-paper, let fall upon it a little fresh tincture of guaiacum, and then a drop of ozonized ether, which will at once strike the dark-blue color of the guaiacum-test for blood.

"In this way I have actually obtained these three kinds of evidence, to wit, that of spectrum analysis, that of the microscope, and that of chemical reaction, from one single particle of blood, which, judged by a definite standard (see *Handbook of Medical Microscopy*, Phila., 1871, p. 283), certainly weighed less than one fifteen-thousandth, and probably less than one twenty-five-thousandth, of a grain."¹

¹ In the trial of Leavitt Alley, in Boston, in February, 1873, it became a material question whether certain dried blood was human, as the prosecution alleged, or was that of a horse. The blood was not subjected to examination until it had dried. As part of the evidence in chief, Dr. S. Dana Hayes and Dr. Horace Chase testified to the effect that the blood was human. This was met by the defence by the evidence of Dr. Chas. T. Jackson, Prof. J. F. Babcock, and Prof. G. B. Harrison, to the effect that it is impossible to distinguish dried blood of men from dried blood of horses.

The following is the report of the testimony as published in the *Boston Daily Advertiser* :—

"Dr. S. Dana Hayes testified: Have examined many stains of blood and supposed blood-stains; I examined a vest that was stained on the inside; the buttons were gone from the vest, having apparently been torn off violently quite recently; examined an undershirt and drawers, and found certain spots upon them both; I cut out the pieces and carried them to my laboratory; the stain on the sleeve of the undershirt is pure blood; it is different from horse blood and menstrual blood; have compared it with the human blood of Mr. Ellis and found no difference between the two; I do not wish to be understood that the blood was identical, for science will not allow of that decision; science can only say that it is blood; science cannot say that it is human blood, but it can say that it is not horse blood or menstrual blood; the blood upon the right knee of the drawers was rather a doubtful stain, because there were more of the white corpuscles of the blood than in any other; it was the stain of blood, but cannot say of what kind; the blood removed from the crotch of the drawers resembled menstrual blood; the blood upon the right knee of the pants was pure blood; it was a large stain, about one-third as large as my hand, having the appearance of being recently washed; it corresponded to the stain on the right knee of the drawers; all the stains on the clothing and the boards were alike, and all pure blood except the blood on the crotch of the drawers; there was a clot of blood on the lining of the coat tail; it was not horse's nor menstrual blood; I divided my specimens of these spots with Dr. Chase; it was on the 13th of January; the chief of police handed me a small piece of skin which I found to be human flesh; I live in Longwood, in Brookline; know where Parker Street is and am familiar with the locality; the Brookline bells ring in the morning at seven o'clock; can hear them distinctly.

"Cross-examined: I began the examination on November 9th, and have continued at intervals up to the present time; the fact that a substance is blood or not is determined by analysis and by microscopic examination; if it stands both of these tests it is blood, and there can be no mistake; the difference between

§ 321. An additional and more certain proof of the presence of blood is derived from certain microscopical crystals which this liquid

horse's and human blood is this—that in horse's blood the corpuscles are about one-third smaller than in human blood; the differences in human blood are very minute, hardly perceptible.

"Dr. Horace Chase testified: Have been in practice as a physician about eight years; am also a chemist; have examined many stains of supposed and real blood; had six specimens of the blood found upon Mr. Alley's clothes and on boards in his stable; the blood upon them was the same; compared it with horse blood and found that there was a difference; should judge it was human blood."

For the defence the following testimony was introduced:—

"Dr. Charles T. Jackson sworn: Have lived in Boston forty years, and am an analytical and consulting chemist and State Assayer for the Commonwealth; have taken a regular medical degree at Harvard College; have frequently had occasion to examine blood in reference to trials; it is not a difficult thing to ascertain whether stains are blood; the drying up of blood depends on the weather; I think it would dry entirely in twenty-four or thirty-six hours; there is no way to tell how long blood has been in a place after it has dried; if blood was scraped off with a knife after it had dried there would be no way of telling how long it had been on any place it was found; blood is a liquid, the fluid part of which is yellow, containing fibrine and red corpuscles; some 79 per cent. of blood is water; corpuscles are circular disks having a central point, and are the same in all mammalia; if corpuscles were thrown on a board the serum would sink into the wood and be absorbed, leaving the corpuscles shrunk up in all manners of shape; when warm and fresh the corpuscles of a man are much larger than those of a horse; there are different-sized corpuscles in man in the same blood, varying from one three hundred and twenty thousandths to one three hundred and seventy-five thousandths; there are also in the blood colorless globules which are very irregular; assuming that dry human blood was brought to me, the corpuscles can be swelled out again, but there is no method known to science which can determine whether the corpuscles after being swelled are of their original size; I know of no means, and none are recorded in scientific authorities, of determining the difference between the dried blood of man and that of mammalia; this is settled by the highest authorities; the measurements of Dumas and Prevost are used all over the continent of Europe; in the best authority of England, a work by Wm. A. Guy, it is stated that there is no means of knowing the difference between the corpuscles of the different mammalia.

"The citation of authorities by the doctor was objected to by the Attorney-General, and excluded by the defence.

"Cross-examined by Mr. May: The last time I made a personal examination of blood in reference to the size of corpuscles was within two years; have never made an examination of the blood of different mammalia with reference to their relative size; a corpuscle can best be compared to a biscuit, the disks

contains. They were discovered in 1853 by Teichmann, and the method of detecting them has subsequently been perfected by Brücke,

being rounded up and the highest in the middle ; the highest authorities known maintain this ; in their normal condition I know that corpuscles are not depressed in the centre ; Lehrmann is a high authority on this question ; there is a difference of a third in the size of a particle of human blood and horse's blood ; if you took particles of human and horse's blood, dry, by putting those two into an artificial serum, it is altogether an uncertain experiment to bring them back to their normal shape ; do not believe that with a powerful microscope a man could tell when a dry corpuscle was brought back into its original shape, and in my opinion they could never be restored with any certainty ; in one drop of blood a single corpuscle might possibly be restored to its original shape, but it is hardly within the range of probabilities ; it requires the most powerful microscope to even distinguish corpuscles ; the blood of reptiles and birds is contained in elliptical or oval-shaped vessels, which are much easier examined than the corpuscles of mammalia ; never have examined the blood of birds or reptiles, but in my opinion if it once became dry it would be impossible to restore the vessels to their original condition ; if a globule of blood was magnified 800 times, it would be about as large as the point of a sharp pencil ; if the blood of two different mammalia was taken in a fresh shape, under certain conditions, and then placed under a magnifying glass, I think a different size in the globules might be observed, but it would be a very difficult and delicate task to observe the difference ; it would be very slight, however ; dog's blood would be the same size as man's blood, and sheep's blood the same as horse's ; I know that Dumas was engaged on his work thirty years ago, for I was one of his pupils in Paris.

"Dr. James F. Babcock sworn : Reside in Boston and am an analytical chemist and professor for five years in Massachusetts College of Pharmacy ; was previously with Professor Horsford at Cambridge ; have frequently been called upon to examine blood and stains ; have examined stains perhaps a dozen times and blood many times ; it is a delicate matter to determine blood, but by a proper method it is an easy thing to recognise it ; blood chemically is a fluid, consisting of the clear portion called the serum, fibrine, corpuscles, and other constituents of small qualities ; the time of the drying up of blood would vary according to circumstances ; blood spattered upon wood in ordinary weather would dry in a day ; in a building blood would dry up in twenty-four or thirty-six hours ; after blood has once dried up it is impossible to tell how long it has been there ; could tell whether blood had been upon a surface two or three weeks, but could not tell whether it had been there four or five weeks ; if blood was scraped from a surface with a knife you could not tell how long it had been there ; take warm blood, and the only way to measure the disks is by a micrometer screw ; the difference in the size of mammalia corpuscles vary within certain limits ; the corpuscles of the same animal are not of the same size, though perhaps ninety per cent. are ; the average size of the human corpuscle is one thirty-two hundredth of an inch in diameter ; the extremes are from one

Virchow, Büchner and Simon, and Bryk. Blood-crystals most frequently are seen as rhomboidal plates, but sometimes as rhomboidal

two thousandth of an inch to one four thousandth of an inch ; the blood coagulates and becomes solid, the corpuscles previously floating in the fluid contract, the edges shrink together, the mineral salts crystallizing, and the shape of the corpuscles when dry, before scraping off or after, cannot be told ; they shrink up like a sponge ; from my experience you cannot tell whether it is human or horse blood ; the average size of a human corpuscle is a little larger than a horse's, one twenty thousandth of an inch ; corpuscles are shaped like cheeses, and after dried blood had gone through a chemical process it would be impossible to restore the corpuscles to their normal condition ; I do not know of any authority which tells the way to distinguish between the dried blood of man and that of mammalia ; there is no standard of measure to tell the difference between the dried blood of a human person and that of a mammalia ; authorities on this point are not doubtful, but are all unanimous in saying that the difference between the dry blood of man and mammalia cannot be distinguished.

" (Witness produced a copy of Guy's Forensic Medicine, and read therefrom a passage in support of his statements) ; the best authorities are Lehrmann's Physiology, Watt's Chemical Dictionary, and Horswell's Toxicologists' Guide.

" Cross-examined by Mr. May : The size of corpuscles in human blood varies within certain limits ; taking the average at one thirty-two hundredth of an inch, they would vary from one thirty-one hundredth to one thirty-three hundredth of an inch ; the difference between the size of corpuscles in human blood and those of horses is about one-third ; have examined human blood with reference to the related size.

" The best illustration of a corpuscle would be a cent ; in so speaking I do not mean its exact shape, because no object is quite like a corpuscle ; the shape of a corpuscle is slightly concave toward the centre ; I have seen a particle of human blood magnified from a diameter of 50 to 500. (Witness then drew the size of a corpuscle as it appeared to him under a diameter of 600.) Had seen a photograph of the blood of an animal under 1500 diameters.

" Re-direct examination : There is no certainty in pointing out on paper the size of an object as it appears under a microscope.

" Re-cross-examination : Lehrmann in his work says that the moist blood of different vertebræ can be distinguished, but the statement is qualified ; I think the most improved micrometer is in the eye-piece.

" Prof. Babcock then read other passages in the work at the request of Mr. Somerby, and claimed that it substantiated his statements ; the experiments made by Schmidt were by drying fresh blood in thin layers on a glass plate.

" George B. Harriman sworn : Live in Boston ; am a dentist and professor of microscopic anatomy in the Boston Dental College ; my experiments lead me to examine the tissues of the human body ; blood consists of fluid in which float red and white corpuscles ; its other substances perhaps chemistry alone

columns, and, when less perfectly developed, have the form of a shuttle, or that of a §. Like other microscopical crystals, they tend can decide; blood drawn from a body will coagulate; the corpuscles in a human body will vary from 2000th of an inch to 3800th; 400 diameters is as small as corpuscles can be examined, but can be magnified to 5000 or 10,000 diameters; I have a microscope which will magnify 10,000 diameters, and do not know of another instrument of that size in this country; have examined sheep's, cats', dogs' and horses' blood with this microscope; the corpuscles in a horse's blood will vary; the moment blood is exposed to the air it coagulates and dries up, and the corpuscles shrink and assume such a shape that it would be impossible to determine whether it was human blood or horse's blood; in a dried condition the corpuscles in human blood and horse's blood resemble each other; it would be impossible to tell the difference between the corpuscles of human and horse's blood, in a dry state, by a chemical test; have made this a specialty, and the highest authorities agree with my statement; microscopes varied, as the lenses were different, and in determining the size of corpuscles it was a matter of judgment.

"Cross-examination: Have been a dentist sixteen or seventeen years; was educated at the New Hampshire Literary and Biblical Institute; I then studied dentistry with Dr. Clough eight or nine years, and was in company with him; entered the Boston Dental School five years ago, and graduated there; attended nine months' lectures there, and made a specialty of the examination of the tissues in the human body; the size of the corpuscles of a frog would be from 1500th to 2500th of an inch in diameter, or about twice as large as human corpuscles; this could be determined by a microscopic examination; with my microscope I have compared human blood and that of sheep, horses and cats; there is no particular difference between the blood of these I have enumerated; have made such an examination since the great fire; I know white corpuscles are the largest by comparison with my microscope; out of a hundred corpuscles I do not think from ninety to ninety-five would be of the same size; the same would hold true of man or horse; upon the authority of Dr. Beal the difference between dry human blood and that of mammalia cannot be distinguished; do not think that science could determine the difference between a fresh drop of human blood and horse's blood.

"Emmanuel Samuels sworn: Live in Quincy, and my business is preparing microscopic specimens; have been engaged in that work twenty years, and think that there is hardly a medical man in the United States but what has some of my specimens; without mechanical arrangements microscopes are not alike; I have never seen two people who saw an object the same through a microscope; do not remember of ever having examined horse's blood, but have that of animals; have had no experience in examining blood.

"No cross-examination."

We give below a letter which appeared in the Advertiser, Feb. 20, 1873.—

"To the Editors of the Boston Daily Advertiser:—

"In your paper for February 17th, under the above heading, appears an

to intersect one another, and often form a St. Andrew's cross, a stellate figure, or a rounded body studded with points like a stramonium

editorial article, possibly based upon the closing argument of the defendant's counsel in the recent trial for murder in this city, which certainly reflects unjustly upon me and my evidence. The official records of this case will show that I did not make such broad statements as have been attributed to me, although I admit and can substantiate all that I did say on the witness stand.

"First, with regard to my microscopic examinations, without reference to the chemical analysis. There were nineteen specimens of blood and soft flesh taken from the stable and suspected clothing: these were repeatedly and carefully compared, upon several instruments, in different lights and with different powers, with the blood obtained from two horses, and also with that on Mr. Ellis's clothing. These comparisons were made at different times—when the specimens were first received and when they were apparently quite recent, again at the end of a month, and again just before the trial. New portions of the materials were taken for each of these examinations, and they were always placed 'side by side,' the horse's blood being that obtained personally from the animals at as nearly the time of Mr. Ellis's death as possible, one of them shortly before and the other soon after this event; and instead of taking other human blood I preferred to compare with that taken from the contents of the barrels found in Charles River.

"In all these comparisons there was no apparent difference between the suspected blood and that of Mr. Ellis, but in every instance the difference between these and the horse's blood was positive, and so distinguishable that the horse's blood could be selected from the others when it was not known upon which part of the slides it had been placed. These specimens were developed in the same vehicle, and, every condition necessary for exact comparison having been carefully preserved, the differences were then found to be very distinct, the horse's corpuscles being alike, and about one-third smaller than the others, when I viewed them with the micrometer.

"Secondly, referring to my evidence—when called by the government, and knowing the responsibility that rested upon me, I testified in the direct examination only to the results of my investigation, that it was impossible to determine whether the suspected blood was human; that it was not like any horse's blood that I had ever examined, and spoke of my comparisons. In the cross-examination, when adroitly asked about *fresh warm* blood, I stated in reply that the corpuscles of human and horse's blood, being of different sizes, could be readily distinguished under the microscope.

"I expressly stated that the accepted authorities gave the measurements of these corpuscles, not that they were my measurements; and, when asked to quote these authors, inadvertently said thousandths instead of hundredths, a mistake which I corrected before leaving the room.

"These are the parts of my evidence that you have taken the opportunity to criticize so severely, saying that 'very small human corpuscles and very large horse corpuscles might be placed side by side and found equal.' I think you

apple. Their prevalent color is a dull brownish-red, but it may vary from a dirty yellow to deep black, according to the amount of coloring matter of the blood which is present in the solution. Their number is likewise subject to great variation. They are wholly insoluble in water, alcohol, ether, and chloroform, and in acetic, phosphoric, and muriatic acids; slightly soluble in ammonia, and in dilute sulphuric or nitric acids; but entirely so in solution of potassa, to which they give a dark-green color, also in English sulphurie and in fuming nitric acid. To the last-named liquid they impart a brownish-red color. In chlorine-water they become disintegrated and corroded, and lose their color.¹

§ 322. These characteristic crystals have been obtained from all kinds of blood—from that of man, quadruped, fowl and fish; from fresh and putrid blood; from newly-drawn blood and from spots several years old; from arterial, venous and menstrual blood; from pure blood and from that which was mingled with all sorts of impurities. It is to be observed that various coloring matters, mostly from the vegetable kingdom, form crystals which bear some analogy to those peculiar to the blood—as indigo, alkanet, logwood, madder, etc.

have overlooked the fact, that, although there are differences between the maximum and minimum measurements that have been made of corpuscles, by the authors you quote, all authorities agree upon a constant difference, and that, when the observer of maximum dimensions gives the measurement of human corpuscles, he also gives the maximum measurement of horse's corpuscles comparatively large, or in other words, that the differences are those of different observers and not different corpuscles in the same kind of blood. And again these differences in the blood of mammalia have been sworn to by others, in capital cases previously tried in this country and in Europe, when the offenders have been convicted and made confession of their crimes.

"In scientific discussions of this kind it is dangerous to rely upon the statements made in books, as inferences may be nearly always drawn from them which are quite contradictory; and this, with the advantage taken by the counsel of professional jealousies, often throws discredit upon scientific testimony and perplexes a jury.

"In the present case, working as I did upon soft flesh and blood, I am very certain of my results, and they were fully confirmed by an able colleague who gave his evidence at the trial, and who has made practical proofs of these truths to many other observers; but I think that my connection with this case has been sadly misrepresented in your editorial already mentioned.

"S. DANA HAYES.

"No. 4 State Street, Feb. 19, 1873."

¹ Büchner and Simon, *Virchow's Archiv.*, xv. 52.

But the blue color of the first of these, and the want of color in the rest, with the rhombic forms of their crystals, are sufficiently distinctive, to which, however, may be added their ready solubility in many liquids, and, for the most part, even in water. Purpurate of ammonia presents some difficulties. It forms, both with and without the addition of acetic acid, crystals very closely resembling those of haematin, in form and in color. Its acetic solution gives residue, after evaporation, of a clear brick-red color, but blood similarly treated is a dull brownish-red. The same residue becomes purplish-red on the addition of water; muriatic acid destroys its color, and solution of potassa gives it a blue tint; whereas blood-crystals are insoluble in the first liquid, and form a dark-green solution with the other.

§ 323. In making this examination, the suspected spots on soft substances—as clothing, etc.—should be cut out, and those on hard substances carefully removed by scraping, and liquids thought to contain blood should be concentrated by evaporation. Spots a few weeks or months old yield their coloring matter readily to water, but older and faded stains require maceration or boiling in acetic acid until the latter is reddened. Indeed, this is the speediest and most certain process for all blood-stains, except when they are upon a substance the coloring matter of which is extracted by the acid. The acetic solution thus obtained should be gradually evaporated in a watch glass at a temperature of 100° to 140° F. If blood is present, a thin, reddish, transparent crust is left behind, in which the crystals of haematin lie firmly imbedded, and ready for examination by the microscope. It is not necessary, as was at one time supposed, to add common salt to the acetic solution. On the contrary, this addition tends to confuse the result where the blood-crystals are abundant. Still, it must be admitted, as Büchner and Simon insist, that, if a first trial without salt gives a negative result, the experiment should be repeated with this addition; and, if enough only of the suspected material is preserved for a single experiment, the use of salt should not be omitted. It is essential that a very minute grain of salt should be added to the solution *before* it is heated.

§ 324. The following important details respecting the application of the above method to the examination of blood-stains under different circumstances are furnished by Prof. Bryk.¹ Spots of blood left by

¹ Prager Vierteljahr., lxii., anal. p. 106.

fleas or bugs yield no crystals. Blood-stains on wood differ with the character of the wood. If smooth, dry, and hard, it does not interfere with the formation of crystals; but if it imbibes the blood, it will still, during the first six or eight days, yield by maceration a solution of the hæmatin which will furnish crystals. At the end of six or eight weeks this is no longer the case with soft wood, the tannin of which apparently renders the coloring matter insoluble. On clean iron the susceptibility to crystallization remains so long as rust does not form. On clay and chalk blood also remains indefinitely, unless it is in a very thin layer, or is exposed to the action of the weather.

§ 325. The coloring matter of fresh blood is called *hæmoglobin* or *oxy-hæmoglobin*. In arterial blood we find *oxidized hæmoglobin*, but in venous blood the coloring matter is *reduced hæmoglobin*. Hæmoglobin is indissoluble. It is soluble in water and in dilute alcohol, and it is decomposed by acids and alkalies. After decomposition by the above reagents it becomes hæmatin ($C_{600} H_{960} N_{154} Fe. S_3 O_{179}$). Hæmoglobin is also converted into hæmatin by being exposed for a long time to the air. There is an intermediate substance between hæmoglobin and hæmatin which is called methæmoglobin. This is formed by the exposure of blood to the air for a shorter time than that necessary to form hæmatin. The bright red color of a recent blood-stain is due to hæmoglobin, the old blood-stain becomes brown and this is due to either methæmoglobin or hæmatin. The change from hæmoglobin into hæmatin is more rapid in cities than in the country. This is due to the fact that the change occurs sooner in an atmosphere in which there is coal gas, a weak acid tending to hasten the change. The change is also rapid if the stain is on a garment which is worn next the skin and comes in contact with the perspiration which is acid. Hæmoglobin is very soluble and hæmatin is very unsoluble. After a piece of cloth once stained with blood has been washed, enough will remain to detect its presence, provided time enough has elapsed for the hæmoglobin to be converted into hæmatin. If the stain has been fresh all of the blood may have been washed entirely out. Hot water, however, will not remove the blood, owing to a further change which it effects in the coloring matter.

§ 326. *Spectral analysis.*—If blood be examined by the micro-spectroscope certain definite changes are found in the spectra, depend-

ing on the age and condition of the blood. Among the most important of the spectra produced by blood are the following.¹

1. *The spectrum of oxy-hæmoglobin.*—The blue end darkened. Two absorption bands visible in the yellow half of the green. The band nearest the violet end is almost twice the breadth of the other band.

2. *The spectrum of deoxidized hæmoglobin (the coloring matter of venous blood).*—The blue end darkened. A single broad absorption band visible in the green.

3. *The spectrum of blood after short exposure. (Methæmoglobin).*—The blue end darkened. The two bands of oxidized hæmoglobin much weakened. A third band visible in the red.

4. *The spectrum of deoxidized hæmatin.*—The blue end darkened. Two well-defined bands in the green, somewhat nearer the violet than those of hæmoglobin. The band nearest the red is the narrower, but it is intensely black. The band nearer the violet is nearly double the width of the other, but the edges are less distinct. In weak solutions it may not be seen.

The following directions are given by Mr. Sorby for the detection of blood by the spectroscope.²

"In applying the spectrum test to the detection of blood-stains, the method of examination must to some extent depend on the amount of material at command. If there be not too little, a small portion of the stained fabric should be soaked in a few drops of water in a watch-glass, the liquid squeezed out, allowed to stand a short time in the glass, so as to deposit any insoluble matter, and then poured into one of the small, deep cells used in examining the spectrum. These cells should be made from barometer tubing, having an internal diameter of one-eighth or one-tenth of an inch, and should be one-half or three-quarters of an inch long; one end being fastened to a piece of plate-glass, like an ordinary cell for mounting objects in liquids. If the stain had been recently made, the spectrum of fresh blood would then be seen, the spectrum of oxidized hæmoglobin, which has two well-defined absorption bands in the green. If, however, the blood had been exposed some time to the action of the air, these bands would be fainter, and another would be seen in the red. The spectrum of methæmoglobin. The relative distinctness of this shows the amount

¹ Tidy's legal Med. vol. i. p. 223.

² Guy's Hospital Reports, 1869-70, p. 274.

of change, and is some indication of the age of the stain; but in forming any such conclusions, it is necessary to know the circumstances of the case, since the sulphurous acid met with in towns or in rooms where gas is burned, produces more change in a day than purer air does in a week. If, however, little or no change had occurred in a town, it would be good evidence of the stain having been recently made. In order to make the detection of blood still more certain, it is well to observe the effects of reagents and examine other spectra. A piece of citric acid about one-fiftieth of an inch in diameter should therefore be dissolved in the liquid in the cell, when it will be seen that the absorption bands of the fresh blood gradually disappear, and are not restored by the subsequent addition of excess of ammonia. This is a most important fact, since it shows that the acid produces a permanent change, which is not the case in nearly all other red coloring matters. To remove all doubt about the presence of blood a very small piece of sulphate of protoxide of iron, not above $\frac{1}{100}$ th of an inch in diameter, should be added to the cell, care being taken to insure the presence of excess of ammonia, and to avoid, as much as possible, oxidization by exposure to the air. It is therefore well not to stir up the liquid, but, having previously rather more than filled the cell, to cover it with a small piece of thin glass, and, after removing excess of liquid by blotting-paper, to fasten down the glass by putting round it a little gold size. If enough citric acid, and not too much sulphate of iron, have been added, the protoxide of iron may be made to dissolve by turning the cell upside and downside over and over again; or by keeping it for a time upside down if the oxide has adhered to the bottom. By this means the haematin is slowly deoxidized, and the well-marked absorption band of deoxidized haematin gradually makes its appearance in the green, with a second fainter band nearer the blue end. If the solution be at all turbid, the cell should be kept horizontal for a time, so that the insoluble matter may be deposited on the side. The production of such a remarkable and characteristic spectrum by the addition of sulphate of iron, as far as I am aware, only occurs in the case of blood, and therefore affords very conclusive evidence of the presence of that substance. With proper care these various results may be seen to perfection, with about $\frac{1}{100}$ th grain of blood, but I need scarcely say that before any one attempts to apply the test in any important case he should try the experiments with a little undoubted blood so that he may be made

familiar with the various spectra, and quite certain that he understands all the requisite manipulations. In all cases the spectra of a suspected stain should be compared side by side with those of blood, in order to see that there is a perfect agreement; and, of course, in all these experiments the solutions must be diluted to such an extent as to show the spectra in a proper manner.

§ 327. "It may, however, often happen that the suspected stain may contain so little coloring matter that it would be essential to examine it without any loss. Since exposure to the air makes the stain only partly soluble in water—and if it had been previously washed nothing but such insoluble matter might be left—the stained fabric should be digested in a few drops of water in which the small piece of citric acid had been already dissolved, and the excess of ammonia afterwards added before the liquid is introduced into the cell. The spectrum should then be examined before and after the oxidization by sulphate of iron. With proper care good evidence of the presence of blood may thus be obtained from an extremely faint stain, since $\frac{1}{100}$ th of a grain of blood suffices to show a decidedly characteristic spectrum.

§ 328. "For detecting blood in urine, it is best to use a tube of thick glass, ten inches long, and a quarter of an inch in diameter, permanently closed at one end with a circular piece of glass, and when filled, covered at the other end with another glass. If the urine be at all turbid, it should be filtered; but, since most of the red globules would also be separated, the precipitate on the filter should be washed with a little water, and the solution examined by itself, or added to the filtered urine. If the depth of the color in the ten-inch tube be so great that the yellow end of the green part of the spectrum is absorbed by the urine, it must be somewhat diluted, or examined in a shorter tube. In the case of urine of average depth of color, I find that as little as $\frac{1}{1000}$ th part of blood can easily be detected, which is equivalent to about one drop in a pint.

"In conclusion, I must say, that, in examining some thousands of spectra, I have been led more and more firmly to believe that with anything like reasonable care there then is no difficulty in obtaining satisfactory proof of the *presence or absence of blood*. I do not at present see any probability of deciding by the spectra from *what kind of animal* it came; but of course the mere fact of its

presence or absence may be of very great importance in connection with other evidence."¹

§ 329. For the modes of detecting *hair*, and also *dried cerebral matter*, under the microscope, we would refer the reader to the suggestions of Orfila and Robin, in Briand's Manual de Méd. Lég., pp. 810–816. For cases in which evidence from these sources was considered of importance, see the same work; also Med. Gaz., vol. xlviii., p. 729, where it was necessary to distinguish between the hair of a human being and an animal; also Taylor's Med. Jur., p. 249, where some cotton-fibres detected by the microscope on the edge of a razor showed that the weapon had cut through the strings of a cotton night-cap, in giving a fatal wound upon the neck; and, finally, one in Henke's Zeitschrift, 1853, p. 334, in which an assassin was detected and convicted partly upon the indicatory evidence furnished by a lock of hair remaining firmly grasped in the hand of the murdered man. The hair resembled, in all its physical character, that of the prisoner; the individual hairs were found to be some of them broken, others torn out by the root, and others cut, and a bare place was found on the prisoner's head to which they corresponded.

§ 330. The value of microscopical evidence of the character of stains and of hair is well illustrated by the following case,² which occurred in Norwich, England. A female child, nine years old, was found lying on the ground, in a small plantation, quite dead, with a large and deep gash in the throat. Suspicion fell upon the mother of the murdered girl, who, upon being taken into custody, behaved with the utmost coolness, and admitted having taken her child to the plantation where the body was found, whence the child was lost by getting separated while in quest of flowers. Upon being searched, there was found in the woman's possession a large and sharp knife, which was at once subjected to minute and careful examination. Nothing, however was found upon it, with the exception of a few pieces of hair adhering to the handle, so exceedingly small as scarcely to be visible. The examination being conducted in the presence of the prisoner, and the officer remarking: "Here is a bit of fur or

¹ "For general directions in using the spectrum-microscope, I beg to refer to my article in Dr. Lionel Beale's 'How to Work with the Microscope,' 4th edition, 1868, p. 218."

² Quoted by Dr. Fleming, loc. cit., from Chambers's Journal, part xxxv. Dec. 1856. *

hair upon the handle of your knife," the woman immediately replied: "Yes, I dare say there is, and very likely some stains of blood, for, as I came home, I found a rabbit caught in a snare, and cut its throat with the knife." The knife was sent to London, and, with the particles of hair, subjected to a microscopic examination. No trace of blood could at first be detected upon the weapon, which appeared to have been washed; but upon separating the horn handle from its iron lining, it was found that between the two a fluid had penetrated, which turned out to be blood—certainly not the blood of a rabbit, but bearing every resemblance to that of the human body. The hair was then submitted to examination. Without knowing anything of the facts of the case, the microscopist immediately declared the hair to be that of a *squirrel*. Now, around the neck of the child, at the time of the murder, there was a tippe or "victorine," over which the knife, by whomever held, must have glided; and this victorine was of squirrel's fur. The woman was convicted, and, while awaiting execution, fully confessed her crime.

The view taken by the courts on the subject of blood-stains will be considered in a subsequent section.¹

V. Causes of Death in Wounds.

§ 331. Wounds become the cause of death either by direct or indirect influence. In the first case the tendency to death is necessary and immediate, or nearly so. In the second, the injury is the remote cause of death, other causes intervening by which the fatal result is accelerated or rendered inevitable. The mode in which a wound proves directly fatal is either by hemorrhage, shock, or great mechanical injury.²

§ 332. 1st. *Hemorrhage*.—The rapidity of dissolution, when this is brought on by loss of blood, is proportionate to the amount and suddenness of the hemorrhage. These, in their turn, depend upon the size and nature of the vessel wounded. Thus a person may sustain the loss of an enormous quantity of blood, provided it ooze but slowly from the body; while a far smaller amount would produce fatal syncope, if rapidly poured out from some large vessel. Blood escapes also from a wounded vein more slowly than from a divided artery, and venous hemorrhage is therefore less likely to prove fatal than arterial, as well as because the blood which is lost is not so

¹ *Infra*, § 822.

² See on the legal questions involved, *infra*, §§ 822 *et seq.*; and see Chic. Leg. News, Oct. 27th, 1883.

essential to life. A third form of hemorrhage becomes, in some special cases, of serious importance. This is *capillary* hemorrhage, in which the blood effused upon the surface of the wound is extremely serous in its character, less dark than venous blood, and appears in the form of drops, which quickly run together and cover the wound. It occurs in persons of a hemorrhagic disposition upon the most trifling wound, and is exceedingly difficult and often impossible to control. In these persons a common epistaxis becomes a matter of grave importance, a scratch with a knife, the bite of a leech, or the extraction of a tooth, is followed by an oozing of blood which no hemostatics will arrest. This hemorrhagic disposition sometimes is hereditary, and, according to the large number of observations now on record, is generally confined to the males in a family. Most of these cases have been collected by Dr. Beck.¹

§ 333. *Age and disease* have also their influence upon the fatality of hemorrhage. Children readily succumb from a trifling loss of blood, and those whose constitution has been impaired by chronic disease have, as might be expected, little power of recovering from hemorrhage. A number of small wounds may occasionally lead to as grave results as a single large one. A singular case is related in which a dealer in leeches was set upon by highwaymen, who, after having plundered him of his money, thrust his head into the sack containing the leeches and bound him fast. The unfortunate man, a short time afterwards, was discovered still alive, but notwithstanding medical aid was given him, he perished in consequence of the loss of blood from the multitude of leech-bites.²

§ 334. Where the hemorrhage is *internal*, besides the exhaustion

¹ Med. Jur., vol. ii. p. 595 *et seq.* *Vide* also Schneider—Die Blüter, erbliche Blutung oder so genannte Bluterkrankheit, etc. Henke's Zeitschrift, 1847, H. i. The following additional cases may also be consulted : Dunlap, New York Journ. (N. S.), iv. 314; Strong, Am. Journ. of Med. Sci., July, 1854, p. 80; Miller, Edinb. Journ., Jan. 1856, p. 638; Townsend, Boston Med. and Surg. Journ., Jan. 1857, p. 447; Huss, Archives Gen., Aug. 1857,, p. 165; and Heymann, Virchow's Archiv., xvi. 183. See also A Treatise on Hæmophilia, sometimes called The Hereditary Hæmorrhagic Diathesis, by J. Wickham Legg, M.D., London, 1872; An Account of a Family Predisposition to Hemorrhage, by Drs. William and Samuel Buel, Transactions Physiomed. Soc. N. Y., 1817, p. 304; Observations on Hereditary Hemorrhage, by Reynell Coates, M.D., of Philadelphia, N. A. Med. and Surg. Journ., 1828, vol. vi. pp. 37-53.

² De Neufville. Henke's Zeitschrift. Erg. H. 1851, p. 40.

attending it, death is accelerated by the mechanical action of the blood. Thus, if an intercostal artery have been wounded, the blood, being effused into the cavity of the chest, will compress the lungs and seriously embarrass respiration. In wounds of the pericardium the blood effused into this sac is most probably the immediate cause of death, owing to its interference with the functions of the heart. If the throat has been cut, the blood may flow into the trachea and lungs, and thus cause death by asphyxia. But the mechanical effects of hemorrhage are best seen in those injuries of the head in which any of the cerebral vessels have been wounded. Here the fatal result of compression from a clot is evident in the apoplectic state induced by it, when, perhaps, the actual loss of blood has been trifling.

§ 335. All of the above-mentioned circumstances must be taken into careful consideration, in the post-mortem inspection of persons who have died soon after receiving one or more wounds. Where death has resulted from hemorrhage alone, the fact is usually indicated by the pallor and waxy appearance of the skin, the absence of cadaveric blotches, and the paleness of the internal organs. Putrefaction occurs also later than usual. These appearances will be found more marked in those cases in which the hemorrhage has not been very rapid.

§ 336. 2d. *Shock*.—The possibility of a person dying from the shock attendant upon an injury, which by itself appears to be unimportant, is attested by experience. Many theoretical explanations have been offered to account for this fact, a consideration of which would here be out of place. The shock from an injury may prove fatal in two cases. 1st. When the blow leaves no trace behind it; and 2d. Where great violence has been done to some important organ without occasioning a sufficient amount of hemorrhage to produce death. If a person receive, for instance, a violent blow in the pit of the stomach, or behind the ear, he may be almost instantaneously deprived of life. On post-mortem examination, there may be found externally but slight marks of contusion, and internally neither laceration, fracture, nor hemorrhage by which the cause can be brought into any visible relation with the fatal result. “Mr. Lambert, a respectable individual of New York, received a blow on the stomach from some rioters, immediately after coming from a supper party. He died almost immediately. On dissection no mark of injury could

be discovered, except some small red spots on the internal surface of the stomach, and there were no marks of external contusion. The brain was healthy. Dr. Post and other witnesses concurred in believing that the blow was the cause of death, and not sudden fright. The prisoners were convicted of manslaughter.¹ A similar case is related by Sir Astley Cooper, and another by Mr. Wood.²

§ 337. 3d. *Mechanical injury.*—If, again, some part of the body, especially any of the internal organs, have suffered any great mechanical injury, as from being crushed by a heavy weight or projectile, or by a fall from a height, there will very frequently be no external mark of violence and no internal hemorrhage sufficient to account for death. But the fatal result is no less evidently due to the powerful impression made upon the nervous system by the violent disruption or laceration thus produced. The following may serve as an example: An American Philhellene was struck by a cannon ball, in the batteries of Napoli di Romani, which carried off the right hand that had been resting on the haunch, a portion of the right half of the pelvis, and part of the thigh. The abdominal viscera were laid bare but not torn, and there was trifling hemorrhage from the wounds. He conversed calmly about the Greek wars, in which he had taken an active part, asked if a man could live who had lost the half of his body, and died suddenly three hours after being injured.³

§ 338. Under this head might be properly introduced instances of death from ill-treatment or from a large number of trifling wounds, unattended with any serious hemorrhage. Death in such cases takes place rather from the exhaustion and terror of the sufferer than from the momentary shock of the injury, but it may also be due to inflammation of internal organs following upon extensive injury to the skin.⁴ Examples of this mode of death have been known to ensue from severe flogging ordered by military authorities.⁵ Such is also

¹ Beck's Med. Jur., vol. ii. p. 337.

² Med. Gaz., vol. xliv. p. 213.

³ Navy Medical Reports, by Sir John Liddell, M.D., etc., Med. Times, April 1854.

⁴ See *infra*, §§ 802 *et seq.*

⁵ *Vide Lancet*, 1846, for an account of the case at Hounslow. A case of epilepsy and one of congestion of the brain produced by this brutal punishment

probably the immediate cause of death in many cases of extensive burns or scalds, where the function of a large portion of the skin is at once destroyed.¹

are recorded by Dr. Davidson, Med. Times and Gaz., Dec. 1853, p. 623. Quite recently, April 1860, a boy of fifteen died at Eastbourne, Eng., from the effect of blows upon his back and legs, inflicted by his tutor with a skipping-rope with wooden handles, and with a thick walking-stick. This punishment was resorted to as a means of conquering the boy's obstinate and perverse disposition, and obliging him to learn. *Id.*, May, 1860. It is evident that the boy was insane.

Dr. Taylor (Med. Jur., 6th Am. ed., p. 254) says: "In death from severe flagellation blood may be effused in large quantity beneath the skin and among the muscles; this effusion will operate as fatally as if it had flowed from an open wound."

¹ A painfully interesting chapter on the cruelties and injuries inflicted upon children has been written by M. Tardieu. (*Ann. d'Hyg.*, Avr. 1860, p. 361.) These are various in their character as the instruments which are employed; cuffs, blows, kicks, stripes, and bruises from rods, cords, thongs, whips, clubs, forks, shovels, tongs, and every variety of instruments. Sometimes children are dragged, pinched, or have their flesh torn; they are deprived of all means of cleanliness, coarsely fed or starved, hid away in dungeons, closets, or boxes: exposed to icy cold or tortured with hot coals, or iron, or corrosive liquids; their limbs are mutilated, the ears and nose lacerated, or the hair torn out; or they are suffocated with food, or are obliged to swallow the most disgusting and loathsome substances.

The victims of these cruelties are generally very young. In seventeen out of thirty-two cases, they were under the age of five years, and in seven cases, from five to ten years old. In nearly all the instances the cruelties were inflicted by the parents; eleven times by both together, eight times by the mother and five times by the father only, four times by a stepmother, four times by a school teacher, and once by a woman to whom the child was apprenticed.

Their aspect is generally peculiar; they are pale and thin, and sometimes wasted almost to the bones, with a dull, downcast, saddened look, and a timid manner. The marks of their cruel treatment generally consist of bruises, wheals, and excoriations. The bruises are usually upon the face, limbs, and back, and are peculiar in not generally occupying prominent parts, as they would do if produced by a fall. Their shape is often distinctive, and resembles that of the hand, nails, stick, shoe, etc., which inflicted them; or they are red, oval, and ecchymosed from pinching; present double parallel and bruised lines when produced by blows with a ruler, or the stripes occasioned by a whip-lash, etc.

The wounds are contused, lacerated, accompanied with fracture of bones, or are produced by fire or by corrosive agents; or certain marks, such as deep furrows in the skin, or a permanent stiffness of the limbs, or a deformity of the bones, indicate the use of cords, or the confinement of the body in a constrained position.

In 18 of the 32 cases collected by M. Tardieu death was caused either directly

The causes now enumerated which render wounds directly fatal without the intervention of secondary causes, may be variously combined. Practically there are few fatal wounds in which they are not united. This fact should not be lost sight of by the medical witness in giving his opinion as to the immediate cause of death.

§ 339. 4th. *Diseased condition of body.*—Sometimes a wound which, under ordinary circumstances, would not be immediately fatal, becomes so, in consequence of the existence of some *abnormal* or *diseased condition* of the body.¹ The cases which fall under this remark are exceedingly numerous. An undue thinness of the skull, a displacement of the viscera, an abnormal distribution of the arterial trunks, an aneurism, a hernia, and many other similar defects may prove the occasion of a wound being rapidly fatal, which otherwise

or indirectly by blows or prolonged ill usage, and it is to be observed that the former may be fatal by their direct shock to the nervous system.

As illustrations of this painful subject, a brief notice of two cases contained in the paper above referred to may here be presented.

A father and mother were condemned to hard labor for life upon conviction for having cruelly maltreated their daughter from the age of eight to that of seventeen years. She was incessantly whipped, knocked down, beaten with all manner of instruments, and lashed upon the back with a cat o' nine-tails while hung up by the wrists. One night, while she was naked and firmly bound down, her father applied red-hot coals to her back and limbs, renewing them as fast as they ceased to burn; and on the following night, after she had been flogged with the cat, her mother applied a sponge soaked with nitric acid to the wounds. These abominable and unparalleled atrocities were several times repeated, with variations of intenser cruelty. The unhappy victim slept in a chest about six feet long by twenty inches high and twenty-four inches wide, upon a litter of stinking straw, with which after her back had been made raw, they mingled nettles and brambles. In this she was confined by a lid secured by means of a padlock, and only raised enough to permit her to breathe. If it was possible to add anything to these cruelties, it was done by the father of the victim, who addressed her in filthy language, and attempted indecently to touch her person, and finally after binding her firmly with her limbs asunder, he thrust a wooden plug into her genitals. It is remarkable that the girl attempted to explain all of the injuries found upon her person in such a manner as not to accuse her parents.

The remaining case is, briefly, the following. The stepmother of a fine, robust boy, four years of age, suffocated him by forcing food into his throat. The mouth and throat were distended by a compact mass of doughy bread, large quantities of which were also found in the stomach and cesophagus some portions of it, even in the trachea.

¹ As to relations of topic in the text to malpractice, see *infra*, §§ 750 *et seq.*

would not necessarily have been so. Thus, if a person have an aneurism of the aorta in the chest or abdomen, and be struck with a certain degree of violence over these cavities, he may suddenly die from a rupture of the aneurismal sac caused by the blow. Or if he have at any time been subjected to the operation of trepanning, by which a portion of the skull is removed, which is not again reproduced, a blow or wound on this part will necessarily prove eminently dangerous.¹ A constitutional disposition to hemorrhage upon slight causes has often brought on a fatal termination in trifling wounds.² It is hardly necessary to state that old age, infirmity of any kind, or that even a highly excitable condition of the nervous system, may rapidly accelerate the approach of death.

§ 340. It is also of importance to remember that owing to internal disease death may occur during a quarrel, although no blow shall have been given. Two women were engaged in a violent altercation, when one was seen suddenly to fall down dead. On examination she was found to have died of congestion of the brain; yet, but for the witnesses of her mode of death, her adversary might have been suspected of dealing her a fatal blow.³

§ 341. (1) *Wounds inflicted on pregnant women.*—Pregnancy obviously renders the prognosis of a wound more grave. The mere shock of the injury may bring on premature birth of the child, and hence endanger the life of the mother. But wounds which involve the abdomen, and especially those in which violence is done to the uterus, are necessarily of extreme gravity for the mother and her child. The injury may result in the death of either or both. The amount of external violence necessary to produce this result it is of course impossible to determine, since many instances are on record in which very severe injury has been inflicted under these circumstances without being followed by fatal results. On the other hand, contusion of the abdomen from kicks or similar violence, may produce death by shock or peritoneal inflammation, and wounds of the impregnated womb are always attended with severe bleeding and the danger of a premature delivery.

§ 342. (2) *Indirect complications.*—A wound may prove indirectly fatal in a vast number of ways. We shall only enumerate the more

¹ *Vide Hinze, Hufeland's Journal, 1819, p. 79.*

² *Vide Beck, ii. 295.*

³ *Prager, Vierteljahrs., lxvi. 26.*

common and important of these, as it is, we conceive, of more consequence that the principle of the remote dependence of death upon a wound, perhaps not necessarily mortal, should be understood, than that all the circumstances which may possibly intervene between the period at which the wound was given and that of the fatal result, should be enumerated.

Should the person not die from¹ the immediate effect of the wound, he may nevertheless succumb from some one of the chain of disturbing causes to which it has given rise, or from the wound itself, rendered fatal after a length of time, by extraneous causes. In many instances the fatal result can be traced to its origin in the wound, partly from the evidence derived from a post-mortem inspection, and partly from the history of the patient's condition from the time he received his injury. The length of time that may elapse after the infliction of violence, before death follows it, is of course indeterminate.

§ 343. Without the supervention of any of the complications to be presently enumerated, the wound may have interested parts not essential to life, and yet may render its protraction for any considerable period impossible, since the changes produced by it in the organism may go on gradually increasing in their gravity till death result. Thus injuries to the spine, producing paralysis of the lower limbs and of the sphincter muscles of the bladder and rectum, or blows on the head, giving rise to chronic diseases of the brain, will gradually undermine the powers of life, and bring it to a deplorable end, after long confinement, suffering, and distress. Such is often, also, the result of gunshot wounds, where the ball remains in the body, and the patient is wasted away by suppuration and hectic.

The old division of wounds, into those which are necessarily and those which are conditionally mortal, gave rise to so many errors of prognostication, that it has now much less authority than formerly. It will, of course, always be necessary to discriminate concerning the gravity of wounds, but it will never be possible to draw a line of distinction, which will be universally recognised, between the absolutely and the conditionally mortal. The truth of this statement will, we think, be fully borne out, when the multitude of circumstances is considered which may influence the result favorably or the reverse.

§ 344. (3) *Tetanus*.—Among the most frequent and serious com-

¹ See *infra*, §§ 860 *et seq.*

plications of wounds, is *tetanus* or lockjaw. This disorder occurs most frequently after punctured or lacerated wounds, especially such as interest the nerves or tendons. It is said to be occasionally epidemic, and to be of more frequent occurrence in warm than in temperate climates. In fact, it may occur idiopathically; that is, without any wound having been received. The wound giving rise to it is often exceedingly unimportant. Thus, it has been caused by the sting of a bee, the stroke of a whip, or the irritation of a small splinter of bone. But it is "mostly connected with wounds of fibrous and ligamentous structures, accompanied with tearing, bruising, partial injury, and exposure of the nerves; with wounds of the joints, of the face, neck, fingers, toes, and of the spermatic cord; it usually begins during the suppurative period, and even during or after the scarring of the wound. Foreign bodies in the wound, especially splinters of bone, ligatures of arteries, if a nerve be included in the ligature, are all to be considered as not unfrequent causes of tetanus. Likewise, hot seasons of the year, cold, frequent changes of the temperature, especially in low districts and in the neighborhood of rivers, and the influence of a moist, cold, foul air upon nerves after their exposure by the separation of sloughs."¹ The time at which it may supervene after the injury is not precisely known. Occasionally it ensues upon recent wounds immediately, and in other cases does not occur for several days. Not unfrequently the wound is entirely healed before the attack. Brodie mentions the seventeenth day as the latest period after the accident in which he had known tetanus to come on.² Sir James McGrigor notices a case twenty-two days after,³ and Blane speaks of it as happening within a month.⁴ It is a very serious complication of a wound, proving fatal in the majority of cases. Dr. O'Beirne states, that of two hundred cases which he saw, not a single one recovered.⁵ Hennen says: "I have never been fortunate to cure a case of acute symptomatic tetanus; in some instances of the chronic species I have effected or witnessed a cure."⁶

¹ Chelius's Surgery, by South, Am. ed., vol. i. p. 417.

² Lond. Med. Gaz., vol. ii. p. 344.

³ Med.-Chir. Trans., vol. vi. p. 453.

⁴ Diseases of Seamen.

⁵ Dub. Hosp. Rep., vol. iii.

⁶ South's Chelius's Surgery, vol. i. p. 419.

§ 345. (4) *Erysipelas*.—This affection, which increases greatly the gravity of wounds, is a frequent accompaniment of those which are lacerated and contused, and especially if seated upon the scalp. It spreads rapidly in the wards of hospitals under certain conditions of the atmosphere, which are not well understood; and an important question will therefore arise, as to the degree of responsibility of the person who inflicts the wound, when the injured man dies from an attack of erysipelas. This disease is, however, far less frequently fatal than traumatic tetanus.

§ 346. (5) *Hospital gangrene*.—Such is the name given to an ulcerative and gangrenous disorder which seizes upon the wounds of persons placed in close and crowded apartments. It is rarely seen except in military hospitals in time of war, or in other situations where fresh air and cleanliness are wanting.

§ 347. (6) *Nervous delirium, secondary hemorrhage, and purulent resorption* may be mentioned as other causes rendering wounds fatal. All of these accidents may ensue upon surgical operations undertaken for the relief of the injured person, as well as be induced by the wound alone. Thus gangrene or erysipelas may attack the stump of an amputated limb, or the patient may die from secondary hemorrhage, or from any of the foregoing diseases notwithstanding the best care and foresight and most judicious treatment.

§ 348. (7) *Delirium tremens* frequently supervenes after wounds in intemperate persons. The symptoms of this disease may occur whether the injury be slight or severe, and a fatal termination may take place in consequence. This fact is well known to hospital surgeons, and they regard persons who have been hard drinkers as unfavorable subjects for operations.¹

§ 349. *Pyæmia* is another cause of death which may follow injuries and wounds. It must be remembered, however, that this disease may occur independently of wounds or injuries.

Pyæmia or septicæmia is a peculiar morbid condition resulting from the absorption of septic material into the circulation. This septic or purulent material acts as a poison, and one of its effects is to cause coagulation of the blood in the large vessels or in the capillaries. It is usually accompanied by the formation of abscesses in various tissues and organs of the body. The mortality in pyæmia is great, and in acute cases the disease lasts but a few days.

¹ As to delirium tremens, see *supra*, vol. i. § 202.

§ 350. 5th. *Surgical operations*.—Death indeed, sometimes takes place during or immediately after surgical operations undertaken for the relief of the wounded person.¹ The question of responsibility in this case belongs to the legal portion of the subject. It may not, however, be out of place to remark that the surgeon can seldom foresee, with confidence, the issue of capital operations, for there are many individual peculiarities and causes beyond his control, which may make it unfavorable. The same may be said of any plan of treatment, whether it involves a serious operation or not. The question may arise, whether the surgical treatment employed was the best that could be devised, and whether, had some other course been pursued a favorable result might not have been obtained. Or, it may be alleged that the treatment was so unskilful, or the patient so much neglected, as to be the occasion of the fatal termination of the injury. That these facts should be established beyond dispute, it ought to be shown that the treatment was marked by the omission of something universally recognised as of primary importance. But as every surgeon has some peculiarities in his practice, and as the mode of treatment of bodily injuries, from the progressive nature of the medical art, is various, this omission should be looked for only in those points which betray an ignorance of the fundamental principles of surgery. However much the opinions of competent persons may differ respecting the choice of remedial means, they will generally, we think, be found united upon the principles which should govern their application. Still, occasionally, the plan of treatment may be so singular, although apparently founded upon correct notions of the curative process, as to call for reprobation. Thus, in a case which occurred in Saxony, a surgeon was deprived of the liberty of practising his profession in that country for having attempted to promote bony union between the fragments of a fractured patella, by the novel expedient of firing a pistol between them. Although no permanent injury was done to the patient, who, indeed, a few months after the operation, declared that his leg was nearly as good as the other one, and that he was even able to dance and to walk long distances, yet the medical commission charged with the case very properly considered the operation as likely to prove a dangerous precedent if it were not condemned.²

¹ As to responsibility of surgeon, see *infra*, §§ 750 *et seq.*

² Casper's *Vierteljahrsschrift*, 1852, Bd. 1, H. 1.

§ 351. The difficulty is not so great where the original wound has been trifling, chiefly because its comparatively innocuous character can be clearly shown. Thus, for instance, if the hand have been wounded and one of the arteries divided, compression may be necessary to arrest the hemorrhage. But if a surgeon, with this view, should apply a bandage so firmly, or, on the other hand, leave it on so long, as to cause mortification of the part, and death ensue in consequence, it is evident that the treatment has not only been unskilful, but that it has really been the cause of death, since the wound of the hand was neither, in itself, mortal, nor would it have produced death in the manner described. But, in severe injuries, in which various complications arise and require the exercise of the greatest skill that learning and experience can give, it cannot be expected that some will not terminate fatally, which, perhaps, under more favorable circumstances, or a better plan of treatment, might have had a fortunate issue. The most humble surgeon may chance to receive the charge of an injury which calls for the enlightened tact and experience of a highly educated man; if his treatment should not prove successful, he should be prepared to show, if required, that his patient had the best care which he was able to afford him, and, if possible, that he consulted with one or more colleagues respecting the treatment. In the language of Judge Woodward, "The implied contract of a physician or surgeon is not to cure—to restore (*e. g.*) a fractured limb to its natural perfectness, but to treat the case with diligence and skill. * * * He deals not with insensate matter, like the stonemason or bricklayer, who can choose their materials and adjust them according to mathematical lines, but he has a suffering human being to treat, a nervous system to tranquillize, and a will to regulate and control."¹¹

§ 352. It is now a very general practice among surgeons to administer ether or chloroform in surgical operations. In spite of every care and precaution the vapor of chloroform may destroy life in a sudden and unexpected manner during an operation. The facts of the case may leave no doubt that the person died from the effects of the chloroform and not from the wound. On post-mortem examination the heart is usually found in a diseased condition, and this is considered as sufficient to account for the fatal effects of the chloroform

¹¹ McCandless *v.* McWha, 32 Penn. St. 261. See, however, *infra*, §§ 766 *et seq.*

vapor. The question then arises as to the responsibility of the person who inflicted the original wound. Dr. Taylor¹ says, "No decision, so far as I know, has ever been given on this point. Was the use of chloroform vapor in a professional view a *necessary* part of the treatment? Was it skilfully and *properly* administered? Could the diseased condition of the heart, which rendered the effects of the vapor more fatal than usual, have been detected by the operator so as to show the impropriety of administering it in this case? These questions should receive satisfactory answers before the aggressor is rendered responsible for death under such peculiar circumstances."²

§ 353. The voluntary and persevering *refusal* of surgical assistance, when this holds out the only probable means of safety, may be enumerated among the causes which indirectly increase the fatality of wounds. Thus, if the amputation of a limb, the tying of an artery, or the observance of a prescribed medical course, be resisted and refused by a patient, he may very often pay the penalty of his obstinacy or timidity with his life. Such instances are by no means rare among the ignorant, with whom often the most assiduous medical attention has to contend against every obstacle to success.

VI. *Wounds of Various Parts of the Body.*³

§ 354. 1st. *Injuries of the head*, from their frequency and gravity, as well as from the various medico-legal questions they often give rise to, are deserving of particular attention.

§ 355. (1) *Concussion of the brain*.—This term is applied to those cases in which, either from direct or indirect violence to the head, the brain receives a shock which may prove fatal, without being revealed after death by any physical alteration. Thus, a blow upon the head, or a fall from a height upon the feet, knees, or buttocks, may, without producing any serious external lesion, be the cause of death by a commotion or concussion of the brain. Cases are also related, in which

¹ Med. Jur. sixth Amer. from the eighth Lond. ed., 1866, p. 272.

² A case is reported in the Brit. Med. Journal, July, 1873, in which a widow brought an action to recover damages for the death of her husband under chloroform by reason of the negligence of the surgeon who administered it. Amputation had been rendered necessary by an accident; chloroform was administered and the man died in five minutes, before the operation could be performed. The proof of negligence was held to have failed and a verdict was rendered for the defendant. See *infra*, §§ 766 *et seq.*

³ As to legal questions involved in this topic, see *infra*, §§ 802 *et seq.*

a blow, familiarly designated as a "box on the ear," has resulted fatally in this manner. In Hennen's Military Surgery, a curious example of concussion of the brain is quoted from an old German author, in which a cannon ball took away the queue from the nape of a soldier's neck, without injuring the integuments in any sensible degree. He continued in a complete state of stupor for many days, during which he was bled at least twenty times.¹ Sometimes, indeed, the immediate cause of death is found in a laceration of the brain, a rupture of a bloodvessel in the brain, causing a compression of this organ by extravasation of blood, or, again, inflammation is set up with a like fatal result. Such accidents are thus conjoined occasionally with concussion.

§ 356. The question has sometimes arisen as to the distinction between the symptoms presented by a person laboring under concussion of the brain, and one in a state of *intoxication*. Very often they are coincident in the same individual. Symptoms of slight concussion are, however, so similar to those produced by intoxication, that it is sometimes difficult to know which cause they should be attributed to. There are indeed few peculiarities by which a physician could, better than an unprofessional person, recognise the difference, and, practically, the history of the case and the odor of liquor upon the breath will be the only sources upon which a judgment can be founded. Mr. South says, "It is often very difficult to distinguish between drunkenness and either concussion or compression; especial care should therefore always be taken to ascertain, as far as possible, the condition of the patient previous to the accident, lest he should be lost by too slight consideration of his symptoms."²

Injuries of the head may prove fatal, whether they involve immediately the contents of the skull or not. Among the most serious of the external wounds are those affecting the tendinous aponeurosis of the occipito-frontalis muscle and the pericranium. Erysipelas is very apt to follow these injuries. Inflammation of these parts is, moreover, readily propagated to the membranes of the brain, and especially after contused wounds. The prognosis must therefore be always reserved, since wounds of these parts, in appearance trifling, may result fatally.

§ 357. (2) *Fractures of the skull* vary in their danger according to

¹ Hennen's Surgery, p. 318.

² Chelius's System of Surgery, vol. i. p. 451.

their situation, their extent, and the amount of depression. Fractures of the base of the skull are the most dangerous, both from the fact that they are not within the reach of surgical interference, and also because the effusion of blood resulting often from the laceration of the lateral sinuses, exercises a compression upon that portion of the encephalon most intimately connected with the functions of both organic and animal life. These fractures are often not recognised during life, in consequence of their position; and it should not be forgotten that the portion of the skull which is broken does not always correspond in situation with the part where the blow was received, but may indeed be produced by *counter-stroke*, at a point directly opposite to it. The cranium is composed of two tables of bone, between which is a vasculo-cellular substance, called the diplöe. The external table alone may be fractured, and although no compression be thereby exercised upon the brain, yet from the intimate vascular connection between the diplöe and the dura mater, the inflammation resulting may be communicated from it to the latter. Or necrosis may follow the contusion, resulting fatally at a later period. The inner table, which from its great brittleness is called *vitreous*, may be fractured without fracture of the outer one, and by compression of the brain by fragments of bone, effused blood, or by subsequent disorganization from necrosis, a fatal result ensue. M. Bayard relates several cases of this kind. In one, a man received a blow from the fist upon the forehead; no mark was left, but he became dizzy and fell to the ground. He suffered afterwards from headache, nausea, and vomiting, and on the twenty-sixth day became paralyzed and died in convulsions. The inner table of the skull, under the right eyebrow, was found to be necrosed. Both hemispheres of the brain were covered with a purulent exudation, and the ventricles were filled with the same.¹ When, however, as is generally the case, the whole thickness of the bone is broken, the danger is proportionably increased, and although the injury is by no means necessarily fatal, yet if the bone press upon the brain, and there be an extravasation of blood over the membranes or into its substance, death is the common result, unless the bone be elevated by surgical aid, and the compression removed. The cases in which it is proper to trepan, and the appropriate place for the application of the instrument, are fully

¹ Ann. d'Hyg., vol. xxxv.

discussed in surgical works. Questions arising out of the neglect of trepanning or its alleged unnecessary employment, have a bearing not unfrequently in charges of malpractice, as well as in homicide.¹ Any abstract of surgical opinion on this subject must necessarily be extremely imperfect. The standard surgical authorities should be consulted in every case. Simple fissures of the skull, or separation of the natural sutures, are not without their gravity, for, though seldom rapidly fatal, they often give rise to a slow effusion of blood, which, having no external issue, extends over the surface of the brain and sinks between its lobes, thus causing a fatal compression of the organ.

§ 358. A very interesting case is related by Deutsbein, in Horn's *Vrtljrschr. f Ger. Med.* xii. 1870, of abscess of the brain after, but not dependent on, an injury to the head.² "A young man, as the immediate consequence of a slight blow upon the head, exhibited only a simple wound of the scalp; subsequently, however, he became attacked with convulsions and other symptoms of disease, which,

¹ Such questions are often difficult of decision, as may be learned from the following case, which is discussed at length in Henke's *Zeitschrift*. 1860, Bd. 79, s. 177. In Dresden, on the 21st June, 1856, a jealous husband inflicted repeated blows upon his wife's head with a hatchet, and left her for dead. The scalp was badly lacerated and the parietal bone was fractured and depressed. The woman's consciousness was, however, only momentarily suspended, and she was soon able to arise from the ground and enter the litter in which she was carried to the hospital. Here she improved rapidly, and on the 2d and 3d of July was able to make a full and clear deposition of all the circumstances of the assault. On the 4th of the month, however, she suddenly became worse, and died on the 5th. On examination, one of the fractures seated in the parietal bone was found to be depressed and to project a quarter of an inch upon the inner surface of the skull. The membranes of the brain were uninjured, but underneath them the brain itself was softened, and pus was found covering the whole hemisphere. The medical gentlemen commissioned as experts to examine the case reported that the original violence was really the cause of death, but not necessarily so, because a timely use of the trephine might have prevented the disorganization which proved fatal. It was objected to this criticism that it was a mere matter of opinion extraneous to the proper functions of medical experts, and so the court held, declaring that the only question for decision was whether the blows inflicted by the prisoner were or were not the cause of death. He was convicted, and sentenced to death, and the sentence was confirmed by the court of appeal, but it was afterwards commuted by the king to imprisonment for life.

² Am. Journ. of the Med. Sci., July, 1871, from *Centralblatt f. d. Med. Wissenschaften*, 17 Dec. 1870.

after first abating, then increased very much in intensity, and in the course of several weeks terminated in death. An examination after death showed an abscess in the right of the cerebellum, in connection with the indications of a long preceding chronic otitis interna of the right side, and caries of the petrous portion of the right temporal bone, so that it was evident that the blow on the head had only an accidental connection with the intracranial abscess."

§ 359. (3) *Wounds of the substance of the brain* are not in themselves necessarily fatal. Many instances are recorded in which a portion of the brain has been lost, others in which it has been traversed by a bullet,¹ and others, again, in which a foreign body has remained in it for a considerable time, and the person has yet escaped with his life.

A man fired a gun, which burst and inflicted a large wound with fracture of the skull in the middle of the forehead. Consciousness and senses were unimpaired, and no pain was felt. After the discharge of several fragments of bone and a small piece of iron, the wound healed. A month or six weeks later the man was sent to jail and put to hard labor, at which he continued for three weeks, when he complained of headache, and died rather suddenly at the end of a week. There was an abscess of the right anterior lobe of the brain, and between the dura mater and the right orbital plate of the frontal bone was a piece of iron which weighed an ounce and a half.² In another case a man had a knife-blade penetrating the brain to the depth of two inches without pain or characteristic symptoms, for twenty-four hours after he received the wound. He then became comatose, and so died.³

§ 360. The following extraordinary case of recovery from the passage of an iron bar through the head, reported by Dr. Bigelow, Professor of Surgery in Harvard University, will illustrate the violence which the brain is capable of enduring. Phineas P. Gage was occupied in charging with powder a hole drilled in the rock, for the purpose of blasting. His assistant having neglected to cover the powder, as is usual, with sand, Mr. Gage, who was not aware of the omission, dropped the head of the iron upon the charge, to consolidate or "tamp it in." The iron struck fire upon the rock,

¹ Med. Facts and Obs., vi. 91.

² Lancet, Sept. 1858, p. 307

³ Charleston Med. Journ., xv. 256.

and the charge exploded. The bar of iron was projected directly upwards in the line of its axis, passing directly through his head and high into the air. It was picked up at some distance, smeared with brains and blood. "From this extraordinary lesion, the patient has quite recovered in his faculties of body and mind, with the loss only of the sight of the injured eye." The weight of the iron bar was thirteen and a quarter pounds, its length three feet seven inches, and its diameter one and a quarter inches. The end which entered first was pointed, the taper being seven inches long, and the diameter of the point one quarter of an inch. The track taken by the bar was the following, as ascertained by an experiment upon an ordinary skull—the entering hole was under the zygomatic arch, encroaching equally upon its walls. "In the orbit, the sphenoid bone, part of the superior maxillary below, and a large part of the frontal above, are cut away, and with these fragments, much of the spheno-maxillary fissure; leaving, however, the optic foramen intact about a quarter of an inch to the inside of the track of the bar." The base of the skull upon the inside of the cranium presents a cylindrical hole of an inch and a quarter in diameter, and the calvarium is traversed by a hole, two-thirds of which is upon the left, and one-third upon the right of the median line, its posterior border being quite near the coronal suture. "It is obvious that a considerable portion of the brain must have been carried away; that, while a portion of its lateral substance may have remained intact, the whole central part of the left anterior lobe of the front of the sphenoidal or middle lobe must have been lacerated and destroyed. This loss of substance would also lay open the anterior extremity of the left lateral ventricle, and the iron, in emerging from above, must have largely impinged upon the right cerebral lobe, lacerating the falk and the longitudinal sinus."

§ 361. Immediately after the injury the patient was slightly convulsed, but spoke in a few minutes. He was carried to an ox-cart which stood at a short distance, and rode in it, sitting erect full three-quarters of a mile. He got out of the cart himself, and, with a little assistance, walked up a long flight of stairs, into the hall, where he was dressed. He retained his senses and memory perfectly, and gave an intelligent and connected account of the accident.¹ Many other instances of surprising recoveries after wounds of the brain might be related, but the preceding case gives, we think, ample proof that,

¹ Am. Journ. of Med. Sci., July, 1850.

even in very extensive injuries of the cerebrum, with fracture, hemorrhage, and loss of substance, death is not the necessary termination.

§ 362. Wounds of the central portion and of the base of the brain are more uniformly and speedily fatal than those of the hemispheres. Wounds of the cerebellum are said to be constantly mortal. In whatever portion of the brain, however, the injury may be seated, or whether the organ be merely compressed by effused blood, the important fact is still applicable, that the individual may recover, apparently, from the immediate shock or consequence of the injury, and die unexpectedly from it afterwards. Thus a person has received a blow upon the head, causing extravasation of blood, and has been able to continue on his way apparently not much injured; he died, nevertheless, a few hours afterwards, with symptoms of compression of the brain. The Prince of N—— was thrown from his horse, but felt himself quite well, and mounted his horse again a few hours afterwards. Before, however, he had proceeded far, he dismounted, complained of nausea, was seized with convulsions, and died comatose. No fracture was discovered, but under the dura mater, on the great falx and in the base of the cranium, there was found a considerable extravasation of blood.¹ In the Lancet for October 1843, is related the case of a man who walked nearly a quarter of a mile after having been kicked on the head by a horse. Two or three fractures were found at the base of the skull. Months or even years occasionally elapse before the injury terminates fatally. A sailor received a blow upon the head, from which he soon recovered, and suffered no ill consequences, with the exception of a discharge from the ear. After a time, however, he suffered violent pain in the head, and had fever and convulsions. He was trepanned, and issue given to a large quantity of pus, with temporary relief. He died one year after the injury. The dura mater was covered with a purulent exudation, which extended also into the spinal canal.² The great orator and statesman, Daniel Webster, was thrown from his wagon May 6, 1852, and for a few minutes was insensible. On the 24th of the same month he delivered a speech to the people, nor then nor subsequently, up to the time of his death, was any mental disorder to be observed. He died on the 24th of October following, and on examination his brain was found covered with a thick layer of fibrin extending over both hemispheres,

¹ Langenbeck.

² Denmark, Medico-Chir. Trans., vol. v. 1814.

and which must have been the remains of an effusion of blood occurring at the time of the fall.¹ Where bullets have penetrated and remained in the brain, they often give rise gradually to fatal disorganization. Morand relates the case of a soldier who was wounded at the battle of Parma, in 1784. He returned on foot to Paris, and died nine and a half months after his wound. The ball was found between the bone and the dura mater. One-half of the cerebrum was destroyed by suppuration. Reich found in a soldier who had received a gunshot wound at the battle of Leipsic, and died eleven months afterwards, a portion of the brain in a gangrenous condition, and the ball adherent to the tentorium. He had suffered only from headaches and occasional epileptiform attacks.²

§ 363. The physician may be required to determine whether an extravasation of blood in or upon the brain is the effect of violence or disease, and if being due to the former, it has not been favored by the excitement of passion. Extravasation of blood, ensuing upon violence to the head, is, perhaps, most generally found over the dura mater, or upon the surface of the brain; that which arises from disease, in the substance of the brain or in the ventricles. Apoplexy is comparatively rare in the young and healthy, and it is hardly probable that in such persons a diseased condition of the vessels would be found occasioning the effusion. If, however, the blow has been inflicted upon an old person, and the extravasation is found in the cerebral hemispheres, there may perhaps remain a doubt whether a predisposition to the effusion did not already exist, and was awakened by the violence inflicted. If, however, it can be shown that the blow was sufficiently violent to produce this result, there can be no doubt, medically speaking, that it was the cause of it. Passion has, moreover, by the excitement of the circulation, a direct influence in causing an already weakened vessel to give way, and when a blow comes opportunely in, it would certainly perplex the most learned casuist to say which of the three causes of death was the effective one. The legal responsibility will be elsewhere set forth.

§ 364. (4) *Wounds of the face*³ cannot in general be considered as dangerous to life. They are often followed by serious deformity and tedious sickness. The parts about the eye and this organ itself form the

¹ Jeffries, Am. Journ of Med. Sci., Jan. 1853, p. 110.

² Henke's Lehrbuch, 19te. Aufl. p. 246.

³ See *infra*, §§ 802 *et seq.*

seat of more dangerous wounds. Blindness, without any apparent external alteration in the eye, has been produced by blows dividing or injuring the supra or infra-orbital nerve.¹ Severe neuralgia may be produced by the same cause. Penetrating wounds of the orbit, it is evident, may reach the brain and cause fatal injury, and many instances of this form of injury are on record. Even where the orbital plate of the frontal bone has not been broken, serious consequences may ensue from the spreading of inflammation from the eye and its appendages to the membranes of the brain. In comminuted fractures of the *nose* from external violence, the blow may have been so severe as to injure the ethmoid bone, in which case, the brain may readily become involved.

§ 365. 2d. *Wounds of the neck.*—In this region there are numerous structures and organs, the wounding of some of which is generally attended with fatal results. The neck being traversed by important blood-vessels and nerves, by the oesophagus, larynx, and spinal marrow, injuries which involve any of these parts, must be looked upon, in general, as serious. Hemorrhage resulting from the division of any of the large arterial trunks, as the carotid, lingual, or vertebral, is most rapidly fatal, and life is usually extinct before the requisite surgical aid can be rendered. The loss of blood from the internal jugular veins is equally fatal with that from the arteries, and in addition, the entrance of air into these vessels is considered to be frequently the cause of instantaneous death. A division of the principal nerves of this region or of the oesophagus, is usually accompanied with a destruction of other parts more essential to life, hence it is but seldom, as, for example, in punctured wounds of the throat, that the dangers from such injuries need be separately estimated.

§ 366. Incised wounds of the larynx and trachea are not in themselves directly fatal, and more or less perfect recoveries are often made from them. But they may become fatal through the effusion of blood

¹ Hippocrates was aware of this fact. He says: "Visus obscuratur in vulneribus supercili et paulo altius, prout autem vulnus recentius est, plus vident, cicatrice vero diutius persistente plus excæcantur." Anfangsgr. der Wundarzneik ii. § 320. In a case where the amaurosis resulted both from concussion and from laceration of the eyebrow with a cricket-ball, the loss of sight was temporary, vision being gradually restored under the use of mercury. Med. Times and Gaz., Sept. 4, 1852.

into the air-passages, or by subsequent inflammation. While in wounds of the carotids and jugulars death is often immediate, the fatal result in those wounds of the neck which do not implicate the bloodvessels is seldom so rapid. There are also many cases of wounds of the neck which may terminate fatally, although none of the above-named parts are wounded. Such are those in which the cellular tissue becomes inflamed, in consequence of which abundant and exhausting suppuration takes place.

§ 367. A case is related by Dr. Simeons, in which an old woman was struck on the neck with a pewter soup-ladle; she died in a few hours afterwards, asphyxiated. Upon examination after death, blood was found extravasated under the muscles of the neck, and into the anterior mediastinum from a rupture of the external jugular vein. The cricoid cartilage and some of the rings of the trachea were broken, by which injury the size of the respiratory tube was necessarily much diminished.¹ The skin was not broken.

§ 368. A case of fracture of the larynx is reported by Dr. Hunt, where a man was struck in the neck with great violence by a piece of wood, two feet long and four inches wide, which flew from a circular saw he was superintending. The patient survived the injury about sixteen hours. There was severe dyspnœa and tracheotomy was performed greatly to the relief of this symptom, six hours before death. It is not stated if there was any external injury, but there was extensive emphysema of the sides, front, and root of the neck.

At the *post-mortem* examination congestion of the posterior and lower lobes of the lungs was observed in a marked degree, and emphysema of the upper lobes. The anterior mediastinum was filled with air, and the connective tissue communicating with that of the neck was emphysematous. There was an oblique fracture of the thyroid and cricoid cartilages, involving posteriorly on the right side the arytenoid, which protruded through the lacerated mucous membrane. œdema of the glottis was marked, and the aryteno-epiglottidean folds were swollen greatly with serum and blood.²

§ 369. A division of the *aœsophagus* is not only in itself almost always fatal, if complete, but because also, being situated behind the trachea, it can hardly be incised without the important bloodvessels of the neck being injured. A case of recovery from a wound dividing

¹ Henke's *Zeitschrift*, 1848, H. 1.

² Amer. Journ. Med. Sci., April, 1866, p. 378.

the larynx and œsophagus to the posterior wall of the latter is given by Dieffenbach, and an example of complete restoration to health after an *entire* division of both of these passages with a pruning-knife is related by Boey.¹

§ 370. Dr. Ryan related to the Medical Society of London a case of suicide, in which, after several ineffectual attempts to divide the thyroid cartilage, a man had succeeded in inflicting upon himself a wound five inches in length, between this cartilage and the os hyoides, dividing completely the pharynx to the vertebræ. The fourth vertebra was roughened by a cut, and there was another cut in the intervertebral cartilage. Some branches of the carotid arteries were divided, but neither these vessels, the jugular veins, nor the sterno-mastoid muscles were injured.²

§ 371. As Dr. Ryan properly remarks, “a person wonders at the possibility of a wound of this sort without cutting the larger vessels; and had the occurrence taken place in a lonely dwelling, where no third party was present, it might become a serious question, particularly under unhappy domestic discussions, whether the wound was self-inflicted, as its extent, the two incisions on the thyroid cartilage, the two on the vertebra, and that on the intervertebral cartilage would argue a determination of purpose and strength of wrist which fall to the lot of few.”

§ 372. 3d. *Wounds and injuries of the spine.*—The danger to life in wounds that interest the spinal marrow is exceedingly great; indeed, they are almost uniformly fatal, either immediately or indirectly. These injuries are, however, more rare than those of other parts of the body, and are often the result of casualty, such as a fall from a height, or being crushed under a heavy weight. In many cases of death from falls upon the seat, the spinal marrow will not exhibit any material lesion. In such cases it is supposed to have suffered concussion, by which some elementary change in its structure has been produced inconsistent with the maintenance of life. In concussion of the spine, death may be almost immediate, but usually it approaches gradually.

§ 373. Any substance compressing the spinal marrow will interfere with or arrest its functions below the point of pressure. Hence the

¹ Reference to both of these cases may be found in Henke's *Lehrbuch*, p. 254.

² Lancet, Am. ed., 1852, p. 218.

height at which the injury has been inflicted has an important bearing upon its gravity. If the compression be above the origin of the pneumogastric nerves, death is immediate, owing to the sudden suspension of respiration. Below this point a wound or injury is not inconsistent with the maintenance of life for a considerable period. A division of the spinal marrow at any part interrupts, of course, if complete, the functions of the part below it more effectually than compression. Dr. Straub gives an instance of immediate death from a wound of the spine by a knife, between the atlas and epistropheus; the spinal marrow was divided almost completely in the middle, between the corpora olivaria.¹

§ 374. Another rare instance of injury of the spine by criminal violence is related by Dr. Simeons, of Mayence. A robust young man, twenty-six years of age, quarrelled with three others, who fell upon him, threw him on the ground, and after having kicked and dragged him for some time, finally left him helpless. He was soon found, and carried into a neighboring house. He survived two days, completely paralyzed, but retaining his consciousness. The fifth cervical vertebra was found to be completely separated from the sixth, all the ligaments being torn; the whole of the spinal canal was filled with partly coagulated blood, and the muscles in the vicinity of the injury much infiltrated. No other injury of importance was detected.²

§ 375. "A bone-setter, named Richard, famous in the neighborhood of Napoléon Vendée, but still more famous by having been fined five francs, which made him a martyr, and increased his practice five-fold, was consulted on June 4th, 1853, by a farmer of the commune of St. Denis, named Lachavasse, who complained, after a heavy fall, of violent pain in the neck. The bone-setter, meeting him, made him enter a neighboring cottage, and said that he would soon put his neck right. With both hands he seized the patient's head, and by a rapid motion from left to right he three times turned the head over the shoulder. At the third time a crack was heard, and the bone-setter exultingly exclaimed, 'It is done; the neck is reduced.' But at this very instant the patient was seized with paralysis of the arms and legs; his speech became very difficult; he complained of violent

¹ Henke, Zeitsch. Bd. xxxv. S. 406.

² Id., Bd. lvi., H. 3, p. 131.

pain, and died the next day, firmly convinced of the skill of the operator, and asserting to the last that his neck was properly set. Examination of the body showed an effusion of blood at the level of the second and third vertebræ, the ligaments between which were stretched and torn; there was another effusion between the cerebellum and the base of the skull, evidently arising from lesion of the cord and its membranes."¹

§ 376. In cases where the *vertebræ are fractured*, the injury done to the spinal marrow may be due to the constriction it undergoes from pressure, its irritation by a spicula of bone, or to the effusion of blood upon it. To whichever cause it may be attributed, the ultimate effect is, in the majority of cases, fatal. It is not unimportant to observe that sudden death may take place from the spontaneous luxation of the second cervical vertebra; the odontoid process, which maintains it in its place, being liable to caries and consequent sudden fracture. This circumstance, as well as the existence of caries of the spine in any other and more usual position, may, in some cases of death after ill usage, explain the facility with which death has come on. Hence it is of great moment that, in case of death from supposed injury to the spine, the absence of this disease should be carefully ascertained. Sir Astley Cooper mentions the case of a woman in the venereal wards of St. Thomas's Hospital, who, while sitting in bed, eating her dinner, was observed to fall suddenly forward. The patients, on hastening to her assistance, found that she was dead. At the autopsy it was ascertained that the dentiform process was broken off, and the head, in falling forwards, had forced the root of the process back upon the spinal marrow, which occasioned her instant death.²

Another case of extensive disease of the cervical vertebræ, with death from fracture of the odontoid process, is admirably reported by Dr. Buckminster Brown, of Boston.³

§ 377. Dr. Stephen Smith in a valuable paper on "Fractures of the Odontoid Process,"⁴ quotes six cases of spontaneous fracture of this process. One of these is Sir Astley Cooper's case, referred to above.

¹ Rév. Thérap. du Midi.

² Dislocations and Fractures of the Joints, p. 463.

³ Am. Journ. of Med. Sci., Jan. 1853.

⁴ Am. Journ. Med. Sci., Oct. 1871, p. 378.

This accident is not necessarily immediately fatal. In one instance, in which the fracture was caused by the person turning in bed, death did not occur for sixteen months.¹ In another case² a man had fallen from a building and received a blow on his head. At first he experienced no inconvenience, and continued his work for six weeks; but finally, a swelling made its appearance on the back of his neck, which was painful. Three months after the injury he was taken to Bellevue Hospital, New York. By this time the deformity of the neck had increased, the head had become fixed with the chin carried to the left side and upward. Complete paralysis of the left arm and leg existed, and weakness of the right arm. As the case progressed there were marked evidences of defective aëration of the blood in purpleness of the face and left arm, general duskeness of the skin, and severe attacks of dyspnœa. The patient died 160 days after the receipt of the injury. At the *autopsy* "the odontoid process was found to be fractured and carried forward so as to lie in a nearly horizontal position in contact with the anterior ring of the atlas; the atlas was dislocated forwards and slightly to the left side; the articular facets resting anterior to the body of the axis; the spinal canal was diminished to three-eighths of an inch; there was no rupture of ligaments or other fracture."

§ 378. Three well-authenticated cases of recovery after fracture of the odontoid process are given by Dr. Smith. One is a case reported by Dr. Bayard,³ where a child of six years fell five feet, striking on the head and neck. She was unable to move her head without great pain, but there was no swelling or irregularity of the neck. Two months after she had convulsive movements of the arms and legs, followed by paralysis of the body below the neck. After remaining in this condition for three months, the patient gradually recovered the power of walking. About two and a half years after the accident, a post-pharyngeal abscess formed, from which a bone escaped, which was decided to be the odontoid process.

These fractures have an important bearing in certain medico-legal cases. Dr. Taylor⁴ states that on several criminal trials this injury was proved to have been the cause of death.

¹ Copeland, Dict. Pract. Med., art. Paralysis.

² Smith, op. cit., p. 352.

³ Canada Med. Journ., Dec. 1869.

⁴ Med. Juris., sixth Am. ed., p. 286.

§ 379. Fracture of the spine may exist unsuspected, the case being considered one of contusion or concussion, and in a few hours or days death may suddenly occur from pressure on the cord from displacement of the fractured vertebra. Mr. Erichsen relates two cases where this took place.¹ One of these was a woman who was admitted into the University College Hospital, suffering from the effects of a fall, the circumstances of which were obscure. There were no signs of head injury or of paralysis, but she complained of pain in the neck, and kept the head fixed in one position. A few days after admission, whilst sitting up in bed, she turned her head suddenly, to see the occasion of some noise, and fell back dead. At the autopsy it was found that the spinous process of the fifth vertebra had been broken off at its root. In the sudden movement it had got jammed between the arches of that and the adjoining vertebra, compressed the cord, and thus produced sudden death.

§ 380. 4th. *Wounds of the chest.*²—Wounds which do not penetrate the cavity of the chest, or which are not accompanied with very great violence, offer but little gravity. In the latter case, however, one or more of the ribs or the sternum may be fractured, a complication which at once enhances the importance of the injury. The same force which has produced the fracture may also cause serious disturbance of the subjacent organs and their rupture. The broken ends of the bones frequently also cause hemorrhage, a disorganization of the lungs or wound of the heart. The danger of penetrating wounds of this cavity cannot, of course, be too highly estimated, although it is, perhaps, less than in similar wounds in the abdomen. From the great vascularity of the organs contained in the chest, and from the fact of their functions being the aeration and the propulsion of the blood, the immediate danger of any injury to them lies in the sudden and abundant arterial hemorrhage, by which the heart and the system generally are deprived of their necessary vital stimulus, and the natural play of the apparatus of respiration and circulation is mechanically obstructed. The hemorrhage in wounds of the chest is almost entirely internal.

§ 381. 5th. *Wounds of the lungs* cannot receive any detailed consideration. The chief point of interest in this connection is the fact

¹ Concussion of the Spine, by John Eric Erichsen, F. R. S., 2d edition, 1882.

² See *infra*, §§ 802 *et seq.*

that they may not prove fatal until a considerable period after their infliction. This is especially the case with gunshot wounds of these organs, in which, if the larger vessels have escaped laceration, the foreign substances introduced into the wounds may continue for many months and years to be a constant source of distress, and be the source of an ultimately fatal disease.

§ 382. A question may sometimes arise as to the ability for motion after severe wounds of the chest. No general rules can be laid down upon this point, but in illustration of the possibility of locomotion after severe injuries to the chest, and the fortunate issue of some which are apparently of the most formidable character, we adduce the following case, reported by Mr. Gallway, Surgeon in the Royal Artillery.¹

"A gunner and driver of the royal artillery had made a murderous attack upon his sergeant with a bayonet, whereby he inflicted two wounds, happily superficial only, upon one leg and arm. Foiled in his efforts of greater success by the seasonable arrival of some other soldiers, the culprit rushed through the barrack-square to escape his pursuers, when the sentry on duty at the gate interposed himself with his carbine, in the attitude of 'charge bayonets' to obstruct him. The consequences of this movement to the other were that as he was rushing through a narrow passage with an impetus which he could not at the time control, he threw himself (not premeditately, it will be understood) with great force upon the bayonet of the sentry, which entered his body an inch to the left of the ensiform cartilage, and, passing through the abdomen, emerged by its point on the left of and close to the spinal column, some inches lower down. When I reached the scene of action, within two minutes after, I found the subject of this wound sitting upon a form in the guard-room, as insensible to any effects from the injury as he was unconcerned at his crime. I could not, therefore, at first believe the statement of his comrades, who told me what had happened, although the bayonet was handed to me *bent* by the violence to which it had been exposed; but on stripping the wounded man, I discovered the two openings of entrance and exit of the bayonet, corresponding, in form and diameter, to those which the different parts of the weapon would have occasioned. Added to this, the bayonet was withdrawn from his

¹ Med. Times and Gaz., May 6, 1854.

body by a non-commissioned officer, upon whose testimony I could rely ; and what is more, this withdrawal was witnessed by a crowd of other soldiers around. Now this desperate character marched, in a quarter of an hour afterwards, to the hospital, *three-quarters of a mile* distant ; and at the end of a fortnight was discharged from the same, to be placed upon trial for his life. The day after his admission his urine was a little bloody ; and subsequently there was a general anaesthesia of the walls of the thorax and abdomen, which lasted but for a while. With these exceptions, the injury was not followed by a symptom, nor did the subject of it require a dose of medicine for his recovery. To the circumstances of this affray having been enacted *before* dinner, I am disposed to attribute much of the immunity from evil which this ruffian enjoyed. Had the stomach been full, it is not easy to conceive that a bayonet could have travelled through such a track of vital organs, without endangering one or more. The reader may be interested to know that the life of this soldier was spared, transportation for the rest of his days being the sentence of his court-martial."

§ 383. One of the most extraordinary instances of recovery from a wound traversing the whole throat, is related in the Abeille Médicale, 15 January 1855, from the Jour. de Méd. de Bordeaux. A young soldier fell from a cherry-tree upon an upright stake, such as is used in the vineyards. It entered the left side between the seventh and eighth ribs, and the pointed extremity projected on the other side between the fourth and fifth ribs, at the posterior part of the axilla, and to the length of a foot and a half. The young man retained his consciousness and intelligence, did not appear to suffer much, and after one end of the stick had been sawn off, was conveyed to the hospital. There the stake was extracted without difficulty, and it was found that it had carried part of the shirt with it. A few bleedings and an antiphlogistic treatment sufficed to remove some inflammatory symptoms which arose, and in three weeks the patient was entirely convalescent.

§ 384. In 1831, a sailor named John Toyler, aged twenty, was guiding the iron pivot of thetrysail mast into the main boom, when the tackle broke, and the mast, which was thirty-nine feet long, and weighed 600 pounds, descended upon him, tearing off his scalp, knocking him down, piercing his chest obliquely, and fixing him to the deck. While thus transfixed he felt no pain. He recovered

entirely, returned to his duties as a sailor, and for twenty-seven years enjoyed, without interruption, the most excellent health.¹

§ 385. 6th. *Wounds of the heart.*²—When the cavities of the heart have been opened death is generally the immediate, as it always is sooner or later, the certain result. When the cavities of the heart have not been penetrated, but their walls alone injured, the danger is still very great, not so much from the loss of blood as from its compression of the organ and the subsequent inflammation. This is particularly to be dreaded when the coronary arteries have been wounded. No case has yet been recorded in which a person has recovered from a wound penetrating the cavities of the heart. One of the most singular instances of apparent recovery from a gun-shot wound of the heart (if it can be properly so called), is contained in the “Notes of observation at the Field Hospital of Rangoon.” Here a soldier survived his wound two and a half months, emaciating, however, rapidly, although he was able to walk about. On dissection, the course taken by the ball was traced through the pleura and lung, by a cartilaginous canal of condensed tissue, to the root of the lung, where all trace of it was lost. On opening the pericardium, however, a hard body was felt in the apex of the heart which, when the cavity was laid open, proved to be a *musket ball* lying at the apex of the left ventricle, partly covered by a thin coating of white lymph. There was no injury to the heart nor evidence of diseased action. The heart was preserved in spirits and sent to Calcutta. The only manner in which the ball could have found its way to the situation in which it was found, must have been through one of the pulmonary veins, as there was no trace of its passage through the substance of the heart. A case which would seem to confirm this idea is mentioned in Smith’s *Jahrbuch*, vol. lxxii. p. 328. A man was struck in the back by a bullet which entered his throax, and caused his death in twenty minutes. On dissection it was found that the ball had entered over the sixth rib behind, grazed the lung, and wounded the pulmonary artery. But it could not at first be discovered. It was soon found, however, in the right ventricle of the heart, where it had fallen by its own weight after penetrating the pulmonary artery.³

¹ *Lancet*, Jan. 1859, p. 45.

² See *infra*, §§ 802 *et seq.*

³ An instance of long survivance after an injury of the heart of an extraordinary character may be found in the *Transactions of the Provincial Med.*

§ 386. The period at which wounds of the heart prove fatal varies in different cases. The reason of this variation is found not only in the extent and locality of the wound, but in the fact that the point of the weapon or the bullet may have remained in the walls of the heart, and thus the sudden loss of blood have been mechanically prevented. A coagulum of blood may, in some cases where the wound is not extensive, cause the prolongation of life for a similar reason. Should the patient escape the fatal results of inflammation ensuing upon such a wound, he is nevertheless exposed to sudden death by the removal of this mechanical obstacle to hemorrhage. Ollivier d'Angers found, out of twenty-nine cases collected by himself, that only two proved fatal within forty-eight hours, and the others in from four to twenty-eight days.

§ 387. Dr. Trugien, of Portsmouth, Va., observed a case in which a young negro man was stabbed in the chest on Monday night, and continued to do well until Saturday morning, at which time, contrary to orders, he went out, and used other improper exertion, in consequence of which he died. The wound, which had healed externally, perforated the cartilage of the fourth rib, passed through a part of the anterior wall of the right ventricle, without opening it, and thence into the left ventricle. About a pint and a half of blood, partly fluid and partly coagulated, was found in the pericardium. The wound in this membrane had completely cicatrized, and *two-thirds* of that in the heart.¹

and Surg. Association, vol. ii. p. 357; a boy ten years old, in discharging a wooden gun, was wounded in the thorax by a plug of wood about three inches long, which he had used to form the breech of this apparatus. It could not be found. He walked about for a fortnight and said he was well, but finally wasted away and died in five weeks and two days after the accident. On dissection the stick was found in the right ventricle, forcing itself between the columnæ carnei and the internal surface of the heart, and incrusted with a thick coagulum. No wound could be discovered in the heart or pericardium. Hence it is supposed that the stick first entered the lung, and afterwards passed into the vena cava and thence was carried by the stream of blood first into the right auricle, and then into the right ventricle.

A man whose case is related by Prof. Malle, received a gunshot wound near the left nipple; he fell instantly in syncope, but afterwards revived, and lived 42 days, when he died of erysipelas of the leg. A piece of wood, "as large as a full-sized writing quill, was found transfixing the left ventricle and the septum, and projecting into the cavity of the right ventricle."—*Brit. and For. Med. Chir. Rev.*, vol. x. p. 46.

¹ Am. Jour. Med. Sci., July, 1850. See also Am. Jour. Med. Sci. for May, 302

§ 388. In a case reported by Dr. Bowen, the right ventricle was perforated a half an inch to the right of the septum, and through the septum the wound extended into the left ventricle, at the orifice of the aortic valves; the wound was lined with coagulable lymph. The patient had survived his injuries eleven days and walked about; he died suddenly from hemorrhage into the pericardial and plural sacs.¹ Muschner reports a case of penetrating wound of the heart which proved fatal on the fourteenth day.²

§ 389. Stadelmayer gives a case in which not only the heart was penetrated, but the stomach also, and an intercostal artery wounded, when death ensued on the fifth day.³ These cases might readily be multiplied, but enough has been said to show that wounds of the heart, even when the left ventricle has been penetrated, are not of necessity immediately fatal.⁴

§ 390. Death is usually sudden, but does not always follow imme-

1829, p. 263, in which there is a notice of a case of gunshot wound of the chest, in which the patient, a negro boy aged 15, lived 67 days after the accident, and on *post-mortem* examination, three shot were found lying loose in the cavity of the right ventricle, and two in the right auricle.

For the case of Wm. Poole (pugilist), see New York Med. Times, April, 1855. In the same Journal for May, 1855, will be found "Statistical Observations on Wounds of the Heart and on their Relations to Forensic Medicine, with a Table of Forty-two Recorded Cases." By Samuel S. Purple, M.D.

¹ Am. Jour. Med. Sci., October 1849.

² Ver. Deutsche Zeitschrift. III. 1. 1848.

³ Med. Correspond. Bl. Bayer. Aertze. No. 318.

⁴ A case of some interest in reference to the power of surviving a severe wound of the cavities of the heart occurred at Guy's Hospital in February, 1854. An Italian, æt. 38, discharged a brace of pistols into his chest on the left side. The man was brought to the hospital, was able to converse on his condition, and lived one hour and fifteen minutes after the infliction of the wound. After death it was found that one bullet had perforated the pericardium, entered the right ventricle, and after traversing the septum of the ventricles, made its exit from the heart at the junction of the left auricle with the ventricle. It traversed the upper lobe of the left lung, and was found fixed in one of the dorsal vertebræ. The second bullet perforated the left ventricle, and then traversed the left lung. The wound was of such a nature that at every contraction of the ventricle, the opening must have been closed so as to allow the flow of blood. This man, owing to severe suffering, rolled about the floor and was with difficulty kept quiet. It will be seen that in this case there were bullet wounds traversing completely the cavities of the heart, yet the man could talk and exert himself, and he actually survived their infliction one hour and a quarter."—*Taylor's Med. Jur.*, 5th ed., p. 308.

diate upon the receipt of the wound, although the first effects are exceedingly alarming. In nearly all the cases, where the wound seriously implicates the heart, the individual staggers a few paces, or falls instantly in a state of syncope. Exceptional cases have, however, been reported, in which, even where the wound has been found subsequently to have penetrated the cavity of the heart, the person has nevertheless retained his consciousness and power of locomotion for a short period after receiving it. Thus in the case of Mrs. Hamilton, murdered by Clough, in 1833, at Bordentown, by repeated stabs with a dirk, three entered the left ventricle, and seven the lung. She walked some distance down stairs after this, and held some conversation, but soon fell and died in fifteen minutes.¹ In a case related by Mr. Boyer, a young man, who received a knife wound in the left ventricle, walked about for ten minutes and did not die until six days afterwards.² In another, where the *right* ventricle was wounded, the man ran up stairs, but died in half an hour.³ Mr. Baird relates a case in which a man continued fighting and ran 150 yards after receiving two penetrating wounds of the chest, and one of them penetrating the left ventricle.⁴ In an instance given by Dr. Babington, a man walked twenty-five feet after a bayonet wound which pierced the peritoneum, colon, stomach, left lobe of liver, diaphragm, pericardium, right ventricle in two places, and the lungs.⁵

§ 391. *Rupture of the heart.*—This occasionally results from external violence, generally of an accidental nature, as from the falling of a heavy body upon the chest. The cause of the occurrence is usually too obvious to require any explanation here. The only case in which rupture of the heart may become the subject of medico-legal investigation, is when a person engaged in a quarrel dies suddenly after receiving a blow upon the chest, and this lesion is found after death. The case is one which evidently admits of discussion, belonging to that category of cases in which death already impending is apparently anticipated by external violence. The fact of the heart being in a diseased condition favoring its rupture such as fatty degen-

¹ Beck's Med. Jur., vol. ii. p. 331.

² Bost. Med. and Surg. Journ., vol. ii. p. 209.

³ Am. Journ. Med. Sci., N. S., vol. xxvi. p. 85.

⁴ Edinb. Mont. Journ., vol. iii. 1843.

⁵ Med. Records and Researches. Lond. 1798.

eration, ulceration, aneurismal dilatation, must be ascertained, as well as the force of the blow inflicted. It must be remembered, however, that the rupture may occur spontaneously in these morbid conditions, even when the person is in a tranquil state, but that a fit of anger greatly increases the probability of its occurrence. Hence a blow upon the chest may really have had nothing to do with causing the rupture, this having been due entirely to the strong excitation of a weakened heart. Rupture of the heart from disease usually takes place in the left ventricle, except where the disease is ulceration, when of course it may take place at any portion. The heart is also ruptured sometimes by great physical exertion, in which case the left auricle is apt to give way. Violent emotions of any kind are enumerated among the causes of this accident, but it is probable that they are only effective when the heart is already weakened by disease. The same may be said of rupture of the *aorta*. Wounds of this and the other great vessels of the chest are inevitably mortal, if the opening is not very slight.

§ 392. 7th. *Wounds of the abdomen.* (1) *Superficial wounds.*—A severe blow in the epigastric region has in several instances sufficed to produce immediate death, and this may result without any external or internal mark of violence. Death in these cases has been generally attributed to the violent impression made upon the solar plexus of nerves. Blows upon other parts of the abdomen not accompanied by any solution of continuity in the integuments may prove serious or fatal by causing peritoneal inflammation or the rupture of some organ in this cavity;¹ but contused and lacerated wounds which are not attended with these effects may still give rise to serious consequences from the formation of fistulous communications. Incised wounds, also, which do not penetrate the cavity, may nevertheless prove fatal from a wound of the epigastric artery.

§ 393. (2) *Penetrating wounds of the abdomen* usually prove fatal by causing inflammation of the peritoneum, either as a direct effect

¹ Numerous examples exist of fatal rupture of the spleen from comparatively slight causes. The reader is referred to the following recent cases: Archives Gén., July, 1854, p. 85; Barth, Id., Feb. 1855, p. 235; Lancet, March, 1859, p. 329: Id., July, 1859, p. 8; Lopez, N. Amer. Med.-Chir. Rev., iv. 286: Adams, Id., p. 756; and Charcot, Gaz. des Hôpitaux, 1858, reports that a rupture of the spleen was found in a new-born child produced by a fall of the mother some weeks before.

of its division or indirectly from the effusion of blood and the entrance of air. When the omentum or mesentery is wounded, death usually takes place by hemorrhage, but sometimes from inflammation and gangrene. Wounds of the *stomach* and *intestines* prove fatal by hemorrhage, or by inflammation resulting from the effusion of the contents of these organs into the peritoneal cavity. The natural tendency of these injuries is to death, although by timely and skilful surgical treatment many cures have been accomplished.¹ A most remarkable case is reported by Dr. Nicholls, of a man sixty-nine years old, who attempted suicide by thrusting a red-hot poker into his abdomen about an inch and a half above the navel. There was no hemorrhage, and a partial protrusion only of omentum, which sloughed off. In three weeks the wound had nearly healed, when the patient tore away the dressings, enlarged the wound, and cut or tore away a portion of the omentum, and a piece of the colon thirty-two inches long. He survived these horrible injuries eight days.²

§ 394. 8th. *Wounds of the liver* vary in importance according to their extent and situation. Superficial wounds of this organ have much less gravity than those which penetrate its substance deeply, and interest the large arterial and venous trunks which traverse its lower surface. If the gall-bladder is wounded, violent peritonitis usually results from the effusion of bile into the peritoneum. Incised and punctured wounds of the *spleen* may produce death by hemorrhage, and this is the more likely to be the case when this organ is abnormally enlarged. Wounds of the *kidneys* usually prove fatal by the effusion of urine and consecutive inflammation. It is hardly necessary to mention that wounds of the great abdominal vessels are unavoidably fatal.

§ 395. 9th. *Wounds of the diaphragm*.—Mr. Guthrie says that wounds of the diaphragm rarely if ever close, but remain open during the rest of the life of the sufferer, ready at all times to give rise to a hernia, which may become strangulated, and thus destroy life. Among other cases given by him, the following is interesting. On the day preceding the battle of Fuentes d'Onor, in 1811, Sergeant Barry was

¹ *Vide* South's Chelius's Surgery, vol. i. p. 522, for several cases. For a case of speedy recovery after a penetrating wound of the stomach made by a bowie knife, see The Stethoscope, June, 1855. (Richmond.) From Charleston Med. Journ. and Review.

² Dublin Med. Press, Oct. 4, 1854.

wounded in the chest. The ball entered close to the nipple of the left breast, and passed out at the back, between the eighth and ninth ribs. The anterior opening of the wound soon healed, but the posterior did not for a considerable period, when he became affected with such a severe cough, with expectoration, that his medical attendant deemed it proper to reopen it. The symptoms were relieved, and portions of his shirt and jacket were discharged. After this his health improved so rapidly as to enable him soon to rejoin his corps; the wound in the back repeatedly opened and healed again, generally at intervals of twelve or fourteen months, but for five or six years it ceased to do so. He died of another disease, twenty-two years after the receipt of this wound. On examination, the whole of the stomach and the greater part of the transverse arch of the colon were found in the left cavity of the chest, having passed through an opening in the diaphragm about three inches long in a transverse direction near the centre. The wound in this instance was through the muscular and not through the tendinous part.¹ Slight penetrating wounds of the diaphragm, Dr. Taylor says, will heal, instances of the fact being upon record.

§ 396. 10th. *Wounds and rupture of the bladder.*—The consideration of these has considerable practical importance, from the fact that the bladder is occasionally ruptured spontaneously from over-distension. If a person have received a violent blow or kick upon the lower part of the abdomen, and the bladder after death is found ruptured, the defence may deny that this was caused by the blow. To the medical mind this line of defence cannot but appear very precarious. Spontaneous rupture of the bladder is extremely rare. A case is reported of this accident to a man, which could only be attributed to his suddenly jumping from a table on which he had been sitting.² In another case the same accident resulted from a violent fall upon the buttocks while the bladder was distended.³ The well-marked symptoms of distension can hardly be concealed,⁴ and the cause of it would certainly be found after death; hence, if rupture

¹ Lancet, April 16, 1853. *Vide also* Lancet, April, 1852.

² Edinb. Med. Journ., ii. 847.

³ Id., iv. 811, 844.

⁴ Nevertheless, Mr. Hird related an interesting case at the Medical Society of London, which is quoted by Mr. Coulson, to show that the patient may walk several miles after complete rupture, and for a time exhibit no symptoms which attract more than ordinary attention. (Brit. and For. Med.-Chir. Rev., July,

has followed a blow, the dependence of one upon the other is, in the absence of undoubted evidence of the pre-existence of over-distension from natural causes, as satisfactory and conclusive as possible. In the words of Dr. Taylor: "If a man were in good health prior to being struck—if he suddenly felt intense pain, could not pass his urine afterwards, and died from an attack of peritonitis in five or six days—if after death the bladder was found lacerated, but this organ and the urethra were otherwise in a healthy condition, there can be no doubt that the blow was the sole cause of rupture and death. In such a case, to attribute the rupture to spontaneous causes would be equal to denying all kind of causation." Rupture of the bladder is usually a fatal injury, producing death by peritonitis; but if it occur in the anterior portion, which is not wholly covered by the peritoneum, recovery will sometimes occur. Thus, in a case reported by Mr. Symé,¹ a boy ruptured the bladder by falling upon two upright stakes of wood, in jumping over a fence. Under an appropriate and skilful treatment he finally got well.

§ 397. A case is related by Dr. Mason² of a man who fell down a flight of stairs, thereby causing rupture of the bladder. About thirty-six hours after the injury, the symptoms being urgent, it was determined to lay open the bladder through the perineum, as in the lateral operation for stone. Dr. M. thought he detected, on passing his finger into the bladder, a rent in the posterior wall of that viscus. The patient did well after the operation, and was discharged well on the thirty-ninth day after the accident.

§ 398. There is rarely any external injury to correspond with the violent internal disorganization. In a case where the urethra was completely torn across by external violence, there was no external wound—not even an abrasion of the skin.³

A case is reported⁴ of a woman who was admitted into King's College Hospital, London, under the care of Sir Wm. Fergusson, having been knocked down while drunk by a blow on the head which caused a small scalp wound. She is stated to have fallen on her back.

1852.) An analysis of seventy-eight cases of rupture of the bladder is published by Dr. S. Smith in the New York Journal of Medicine, new series, vi. 336.

¹ Edinb. Month. Journ., p. 332.

² New York Journ., Aug. 1872.

³ Neill, Hospital Gases. Med. Examiner, Aug. 1854.

⁴ Medical Times, 1866, vol. ii. p. 253.

When brought into the hospital she was in a state of semi-collapse, but afterwards recovered sufficiently to give some account of the accident. She died of peritonitis two days after the injury. At the autopsy there was no sign of external wound, but the bladder was found ruptured at the upper and back part, there being a clean longitudinal rent of two inches in length. There was a considerable amount of urine in the abdominal cavity, and a great deposit of lymph gluing the intestines together. The other viscera were healthy.

§ 399. The occasional immunity from serious effects in wounds of the abdomen of apparently the most dangerous character, is well illustrated by two cases, very similar to one of another, which have occurred in this country. Dr. Sargent, of Worcester, Mass., reported to the Boston Society for Medical Improvement, a case which occurred in his practice. A woman, about 37 years of age, in sliding down from a hayloft, impaled herself upon the handle of a pitchfork, which passed in at her vagina to the length of *twenty-two* inches, when her feet struck the ground. The handle was immediately withdrawn. Dr. S. saw the handle of the fork, which was rounded a little larger at the end than elsewhere, perfectly smooth, two inches in diameter, and showed distinctly the stain of blood up to an abrupt line, twenty-two inches from the end. It was supposed that the instrument perforated the upper end of the vagina on the left side, passed between the uterus and rectum, in front of the kidney, behind the spleen, and between the diaphragm and false ribs, peeling up the costal pleura till it reached the scaleni muscles. The subsequent history of the case, which showed a fracture of the first rib, proved this diagnosis correct. The woman recovered in a few weeks entirely.¹ Another case is reported by Dr. Bryant, of Mississippi, of a negro woman who leaped from the height of ten feet and alighted upon a tobacco stick, which had been driven firmly in the ground, and was concealed by some loose fodder. The stick was four and a half feet long and one inch square. It entered the vagina, penetrated its upper part, and traversed the abdomen at the eleventh or twelfth rib. The stick was smeared with bloody mucus to the extent of twelve and a half inches, and its termination was abrupt and distinct. "It was quite clear that the stick

¹ Am. Journ. Med. Sci., Oct. 1853, p. 355.

was not stained by the fluid running down upon it." This woman also recovered, after losing a considerable quantity of blood.¹

§ 400. 11th. *Wounds of the genitals.*—In the male these are usually self-inflicted, and instances of the kind most usually occur among the insane. The danger to life is great if the injury have been inflicted with a sharp instrument, and is of considerable extent; the hemorrhage being profuse, and not easily controlled. Impotence may be the result of an imperfect mutilation.

M. Toulmouche² has contributed some interesting cases of wounds of the genitals. One of them, a case of castration of the right testicle, is especially interesting, inasmuch as M. Toulmouche was enabled to state, from the appearance of the wound and in spite of the obstinate silence of the patient, that the castration must necessarily have been performed by a second person. The recipient of the injury must have been forcibly held. The tunica vaginalis was neatly opened from above downwards, the testicle drawn out, and the cord divided above in an artistic manner.

§ 401. "*Fracture*" of the penis.—Although this accident is rare, a sufficient number of cases have been reported to make it worthy of notice. In the Cincinnati Journal of Medicine for July, 1866, Dr. J. P. Bing relates a case which was tried in the Court of Common Pleas, in Meigs County, Ohio, February, 1866. The indictment was substantially as follows:—

"That one Mary Broderick, of the county aforesaid, did, on the 29th day of July, 1865, purposely and maliciously, but without deliberation and premeditation, with her right hand, grasp and wrench the penis of Patrick Broderick, with intent to inflict a mortal wound; thus the urethra with the corpus spongiosum and corpus cavernosum were broken and severed; and that Patrick Broderick (her husband) died from the effects of the wound, on the eleventh day after the injury was inflicted."

The physicians who attended the case stated that there had been retention of urine with apparent extravasation; and it was not until

¹ Am. Journ. Med. Sci., Oct. 1853, p. 399. The sequel of Dr. Sargent's case is given in the Boston Med. and Surg. Journ., Dec. 1856, p. 387, and several analogous ones are there referred to by Dr. Coale. Dr. Maynard has reported a fatal case in a woman who in sliding down a hay-mow, fell upon a hay-hook. (*Ibid.*, Aug. 1857, p. 29.)

² Ann. d'Hyg., xxx. p. 110. From Year-Book of Med. and Surg. 1867-8.

after three days that they had succeeded in introducing a catheter and drawing off the urine.

At the *post-mortem* examination the “corpus cavernosum, left side, was found to be ruptured; corpus spongiosum mutilated, and urethra entirely severed; infiltration of urine into cellular tissue of penis, perineum, and into scrotum, with incipient gangrene.”

The defence set up was that the injury was received by falling down stairs—the deceased having been in a state of intoxication at the time.

The verdict rendered was, “Guilty of manslaughter,” and “not guilty of murder in the second degree.”

Dr. Blackman refers, in the same journal, to several other cases of a similar injury. One of them is from the *Bulletin de la Société de Chirurgie*, of Paris, vol. iii. p. 514, and is reported by M. Huguier. There was “complete rupture of the canal of the urethra and partial rupture of the corpora cavernosa followed by death.” “The patient, a vigorous man, æt. 37, had some affection of the ear, for which he applied a blister. Some days afterwards, while in bed with his wife, and having *des érections continues*, from the effect of the blister, had connection, the wife having the superincumbent position. The whole weight of her body was brought to bear upon the organ then in *violente érection*, and the latter was thrust against the thigh and perineum.

On account of retention of urine and failure to introduce a catheter, the bladder was tapped above the pubis. “Erysipelatous inflammation, with emphysema, showed itself at various points, and the patient died on the twelfth day after the accident. The *post-mortem* showed that the rupture of the canal was complete, and the corpora cavernosa were partially divided.”

§ 402. Upon the female, wounds of the genitals are generally due to the violence of others. This appears to have been a favorite mode of committing murder in Scotland, probably from the facility with which it would be overlooked. Several cases of the kind have been recorded, in which criminal trials took place. The latest are the trials of Andrew Paterson and Wm. Hetherton, charged with the murder of their wives by wounding them in the genital organs. In one case, the woman had been recently confined. A wound an inch and a half long was found in the vagina, supposed to have been inflicted by the iron hold-fast of a sign-board. In the other, the

woman was in the eighth month of her pregnancy. There was found a lacerated wound of the genitals immediately on the left side of the urethral orifice. There were numerous contusions on both thighs and in the neighborhood of the vulva; the injuries were attributed to kicks.¹

§ 403. Occasionally, as has before been mentioned, there may occur spontaneous hemorrhage from a ruptured vein at the root of the labia; hence the necessity of establishing the presence of marks of violence, such as contusions, abrasions, etc. In a case, however, related in the *Lancet*, a woman received a kick in the private parts from her husband, while she was stooping, and died within an hour, from hemorrhage. The left root of the clitoris was crushed, and there was a wound on the edge of the vulva about an inch long, but otherwise *no* contusion or marks of violence.² Examples of accidental wounds of this description have already been given (Chap. I. § 285). Lacerated wounds of the uterus, produced by the throes of parturition, are not necessarily fatal; and there are even cases of recovery after the complete avulsion of this organ and its appendages by an ignorant or brutal accoucheur.

CHAPTER II.

BURNS AND SCALDS.

- I. How classified, § 405.
- II. Appearance of burns upon dead body, § 406.
- III. Wounds upon the burned, § 409.
- IV. Effects upon the system, § 412.
- V. Post-mortem appearances, § 414.

§ 405. I. *How classified.*—The effect produced upon the *living* person by a heated body, varies, according to the nature of the vehicle by which the heat is applied. Thus, boiling liquids produce scalds,

¹ Ed. Month. Journ., June and Sept. 1848. For other cases, see Watson on Homicide, p. 104, and London Med. Gaz., xliv. p. 813.

² Lancet, Oct. 1846.

which are serious in proportion to the density of the liquid; solids in a state of ignition, burns which are deep and extensive in proportion to the elevation of temperature and the duration of contact; while gases, in a state of combustion or flame, consume and destroy the living structure more completely than either of these other agents. The injuries produced by certain chemical substances of a caustic nature also receive the name of burns, in ordinary language, although an elevated temperature is not required for their effects. The ordinary division of burns, according to their gravity, is that made by Dupuytren :—

1st degree. Superficial inflammation of the skin, without the formation of blisters.

2d. Vesication. The serum contained in the blisters is sometimes clear, sometimes opaque and of a yellowish-white color, or, again, sanguinolent. If the cuticle have been removed, the true skin is found granulated, of a vivid red, or secreting pus.

3d. Destruction of the external surface of the true skin. That portion which has lost its vitality is seen in the form of eschars, which are soft and yellow if made by a liquid, but hard and brown, or black, if made by a heated solid or burnt with flame. The skin surrounding them presents the character of burns of the first or second degree, being red and blistered. This form of burns leaves scars, which are on a level with the skin, or nearly so, and are white and shining.

4th. Disorganization of the whole thickness of the skin. These burns differ from the preceding only in the greater thickness of the sloughs. The scar which is left is characteristic, being sunk below the level of the skin, and irregular, radiated, and puckered.

5th. Not only the skin, but the subcutaneous cellular tissue, and a portion of the muscles underneath are destroyed. The injury is graver in its character than the last, although the external appearances are not strikingly different.

6th. Complete carbonization of the burned part.

§ 406. II. *Appearances of burns made upon the dead body.*—Orfila says that *vesication* manifestly denotes that the burn was made during life. According to Dévergie, if boiling water or a red-hot iron be applied to the skin of a person, ten minutes after death, neither *redness* nor vesication will be produced, and it is not possible to mistake a burn made after death for one which was made before it.

Dr. Christison made six experiments, with a view of satisfying himself as to the distinction. He says that it is evident from these that the application of heat, even a few minutes after death, causes no effects which can be mistaken for those induced by the vital reaction. In one case, in which a young man lay in a hopeless state of coma from poisoning with laudanum, a hot iron was held on the outside of the hip-joint, and half an hour after death, a red-hot poker was applied to three places on the inside of the arm. It is stated that vesications were formed in both instances, those made during life contained serum, and those formed after death *air*. Dr. Taylor says that he has performed many experiments on the bodies of infants, eighteen and twenty hours after death, both with boiling water and heated solids; but that in no case did he observe any kind of vesication to follow at that period. The skin became shrivelled, and was partly destroyed by the heat, but no blisters were produced. Dr. Casper made four experiments with the same result. It is stated, however, by MM. Leuret and Champouillon, and also by Dr. Wright, of Birmingham, that serous blisters may be produced after death in anasarcaous subjects. In M. Leuret's experiment, the blister contained an abundance of reddish-colored serum. In those of the other two observers, the serum was not tinged with blood. In one of Casper's experiments, however, a flame was held close to the dropsical scrotum of a dead body; the skin nearest the flame shrivelled up and acquired a shining silver-gray surface, but no blister was raised. We think, however, it may be fairly objected to this and the preceding experiments of Casper, alluded to, that the degree of heat employed was much beyond that necessary to produce vesication. In two of the other three experiments, cotton wadding soaked in turpentine was placed in contact with the skin and lighted. In one case it was allowed to burn *four* minutes, in the other *three and a half*. In the third experiment, the flame of an oil lamp was held *three* minutes in contact with the back of the foot. In each case the skin was superficially roasted. The result might, perhaps, have been different had a less intense heat been employed. Casper also alludes to a fact of some importance in this connection. He says that it is a common practice to drop burning sealing-wax upon the pit of the stomach immediately after death, with the hope of reviving the defunct, but that in the large number of bodies he has seen, in which this unintentional experiment had been performed, not one presented a trace of

vesication in consequence. It may therefore, we think, be fairly inferred that, with perhaps the exception of anasarcaous bodies, the presence of vesications upon the skin may be looked upon as a sure indication of the burn having been made during life, or immediately after, while the body is still possessed of a certain degree of organic vitality. Their absence, however, will be no evidence that the burns were not made upon the living person, since it is very possible that only the more serious results of burning may be found. There is, however, another sign of burning during life which cannot be simulated upon the dead body, viz., the congested and inflamed state of the skin around the blister or the burn, which is indicated by a red line which gradually merges into the color of the surrounding skin. This red border remains after death, and experiments made by Drs. Christison and Taylor prove that it cannot be produced by the application of heat to the dead body. The same may be said also of the red and granulated appearance of the true skin under the blisters.¹

§ 407. The only experiments which appear to throw doubt upon the correctness of these conclusions are those of Dr. Maschka² and Gräff.³ The first of these gentlemen found, in his experiments upon the dead body, that when the flame was brought in contact with the skin, blisters were formed of various sizes from that of a pea to that of an apple, within the space of *one minute*. These burst with a

¹ Prof. W. Hoffmann claims that by means of the microscope burns of the skin of the third order originating before death may be distinguished from those inflicted *post-mortem*.

A piece of the leathery skin is cut out and held up to the light; when, if the burning took place before death, the apparently uniform brownish-red color resolves itself into an exceedingly fine net-work of capillaries, of a rusty color traversing the dried corium. This is made clearer by a pocket microscope. The injection is as complete as if produced artificially. This observation is confirmed by the microscope by showing the capillaries of the corium, through almost its entire extent, full of dried rusty-brown blood.

The existence of this condition here described proves that at the time of the burning or scalding the capillaries must have been full of blood; the body must, therefore have been alive. In bodies in which the burns were of post-mortem origin, the author has never found a trace of injection of the dried corium, the capillaries of which under the microscope were seen to be empty; in the subcutaneous cellular tissue the vessels are almost empty, but a few larger branches contain a small amount of dried blood. (Journal of Psycholog. Medicine, vol. iv. p. 639, and Prager Vierteljahrsschrift, in A. M. Centr. Ztg.)

² Canstatt's Jahresbericht, für 1852, Bd. vol. ii. p. 46.

³ Prager Vierteljahrsschrift, 1850, 4 Bd. p. 123.

noise and discharged serum. No redness, however, was observed under or around these vesications, until the denuded surface had been some time in contact with the air. The application of boiling water produced the same result. When the heat was maintained, the further changes could not be distinguished from such as would have been caused upon a living person. Dr. Gräff, whose object in his experiments was to ascertain the length of time required to consume a head to a degree similar to that in which this portion of the body of the murdered Countess of Görlitz was found, laid the emaciated body of a person aged about fifty years upon a table in such a manner that the head hung over one end of it. A vessel containing alcohol was placed between five and six inches below it, and the spirit set on fire. The integuments of the head were consumed in about half an hour, and, at the distance of from ten to fifteen inches from the burning parts, white vesications were formed, some of which had a moist and red base, and a pale-red areola around them. Accident furnished Dr. Taylor with evidence of the same nature. "A man was accidentally drowned; his body was immediately taken from the water, and soon afterwards placed in a warm bath"—within ten minutes after apparent death. The water was so hot that portions of the cuticle came off when his body was removed, for it was found impossible to resuscitate him. On an inspection of the body, over a considerable portion of the skin, especially of the extremities, there were several vesicles *filled with bloody serum*. There was no anasarca here to account for their production; and the fact of their occurrence appears to bear out the view of Dr. Wright, that the production of a serous blister on the dead body depends upon the amount of organic life remaining in the body. The man was pulseless and to all appearance dead when placed in the hot bath; hence the effects of hot liquids on the living and the recently dead body are proved by this case to be very similar.¹

§ 408. These experiments are directly in conflict with those before enumerated, and although the weight of authority and of facts is opposed to the possibility of the production of vesications after death, which can be mistaken for those which result from the application of heat during life; yet as these experiments seem to prove the contrary, the question still remains open, except, perhaps, when the

¹ Med. Jur., 5th ed., 1855.

comparison lies between the effects of burns upon the living body and upon one in which life has been extinct for a considerable length of time. In such a case we do not think it would be difficult to show important means of distinction depending upon the absence of vital reaction.

§ 409. III. *Wounds upon the burned.*—From the frequency with which a criminal, after having robbed a dwelling and murdered one or more of the inmates, sets fire to it with a view of destroying the traces of his crime, it is often the province of the physician to seek for *wounds* upon the dead bodies there discovered, and determine their mode of origin. There are certain mechanical effects produced by fire upon the skin which should not be mistaken for wounds. Thus, in a case given by Casper, of an old man whose clothes caught fire as he was seated before his stove, the body was burned black, and on the right side, over the liver, was a gaping wound, through which the viscera could be seen. It was nothing more than a fissure caused by the intense heat.¹ In another case, however, in which two old people were found burned in their house, the fact of their having been previously stunned, if not killed, by blows upon the head, was ascertained by the existence of fractures of the skull, under which coagulated blood was found effused upon the *dura mater*. The criminal was not discovered for a long time, but the circumstances of the murder were betrayed by an associate. A singular circumstance was observed in this case, viz., that, although the bodies were both almost destroyed by fire, the element had spared that portion of the head by which the murder was revealed.² Dr. Wyman, in his evidence in the Webster case, stated that “some of the fragments of the bones of the skull (of Dr. Parkman) had the appearance of having been broken previous to calcination, or being burned with fire. Calcination,” he remarked, “removes the animal matter which gives to bone its tenacity; before this is removed, it breaks with sharp angles, and is more likely to splinter. Common surgical experience shows this. After calcination, the bone is more likely to crumble.”³

§ 410. In an interesting case of assassination related by Casper, the presence of contused wounds and extravasated blood upon the forehead and face of an aged woman, and vesications from burning,

¹ Gericht. Leichenöff. ii. Hundert. Fall. 99.

² Henke's Zeitschrift, 1844, p. 284.

³ Bemis's Report of the Webster case, Boston, 1850.

upon some portions of the body, gave indubitable evidence of violence during life. Here the criminal confessed that he had struck his victim in the face with his fist and a paving stone, by which she was rendered senseless; but with a strange refinement would not acknowledge that he had designedly set fire to the apartment in which the half-consumed body was found.¹

§ 411. A conflagration having taken place in Paris, which caused the death of numerous persons, M. Tardieu, to whom the examination of the human remains was officially intrusted, took the opportunity of minutely observing and recording the effects produced upon the human frame by fatal burning. The soft parts on the bodies examined were in various conditions; completely charred to cinder, partly carbonized or reduced to fibrinous shreds. The bones were dried and brittle, and in the long bones, fractures with obliquely splintered and charred ends were observed, differing distinctly from the character of ordinary fractures. In the flat bones which were thinned by the heat, the fractures caused by the heat assumed the form of fissures *confined to one surface, and not penetrating the substance of the bone.* The intervertebral disks were contracted in their diameters. Teeth and cartilage seemed to resist the action of fire more than other hard parts. The soft parts exhibited great diminution of volume; this was more especially observed upon the viscera, which had been more or less protected from the immediate action of the fire. Some of these were mummified. The blood in the heart, aorta and other large vessels presented an extraordinary appearance, resembling wax or fatty matter, of a most beautiful carmine color. The cerebral substance was contracted to half its bulk, and in consistence resembled a half dressed sweetbread. To the preceding details, M. Tardieu has added the appearances discovered on the body of an infant that had been lying several years behind a stove, and had become completely mummified. The effects of slow, long-continued heat were much the same as the above-described, with the absence of the destructive agency of fire seen in the carbonization of the external soft parts.

§ 412. IV. *Effects on the system.*—Burns and scalds are well known to be excessively dangerous, especially in children. The greater the superficial extent of the burn, the more apt is it to prove fatal

¹ Gericht. Leichenöff. sup. 1stes Hundert. Fall. 96. On this subject see a paper by M. Tardieu, Ann. d'Hygiène, Jan. 1860, p. 124.

² Brit. and For. Med. Rev., from Ann. d'Hyg., April 1854.

with rapidity, especially when upon the chest or abdomen. When the burn is extensive, or the subject impressionable, the general irritation produced by the excessive pain is sufficient alone to cause death. This generally ensues upon a kind of stupor, characterized by inertness, somnolence, paleness of the face, slow and stertorous respiration, and small pulse.¹

§ 413. *The period at which death occurs.*—The first week after a burn is the most fatal time, but death may be delayed for several weeks. Mr. Ericksen found that of fifty fatal cases from burns there died:—

| | |
|------------------------------------|----------|
| During the first four days, | 27 cases |
| From the fourth to the eighth day, | 6 " |
| In the second week, | 8 " |
| " third " | 2 " |
| " fourth " | 2 " |
| " fifth " | 4 " |
| " sixth " | 1 "1 |

Death may be almost instantaneous from shock or very speedy from the effects of the gases of combustion.

The causes of death from burns.—Syncope and suffocation frequently are the immediate cause of death, for instance in large fires, when the asphyxia may be caused by the want of fresh air or by the presence of a large excess of the products of combustion.

Shock to the nervous system is one of the chief sources of danger in cases of burns.

Collapse is most likely to be fatal where there have been extensive burns upon the trunk.

A person may recover from the immediate effects of the burns and die of tetanus or convulsions, or with some symptoms arising from the nervous system. Death may occur after a long interval of time from secondary causes. In a case referred to by Dr. Taylor the patient had suffered from burns from a fire-damp explosion. Recovery took place from the burns, but death occurred after the elapse of three months from ulceration and inflammation of the intestines.

Death may also occur from bronchitis, pneumonia or laryngitis.

§ 414. V. *Post-mortem appearances.*²—These are often by no means well marked; the most constant being a capillary injection of the

¹ Tidy's Legal Medicine, vol. i. p. 466.

² See as to signs of death, *infra*, §§ 640 *et seq.*, as to identification, *infra*, §§ 620 *et seq.*

mucous membrane of the bronchia and alimentary canal and serous effusion into the ventricles of the brain. In a child 13 days old, which was scalded to death by being placed in a bath of boiling water, the official examination disclosed the fact that the mouth, throat, and oesophagus almost as far as the stomach, were denuded of their epithelium, which lay upon the surface as a white and greasy substance. The only appearances that could be considered at all abnormal were a slight injection of the meningeal vessels, rosy and apparently inflamed patches in the small intestine, and an unusual amount of thick dark blood in the lungs and liver.¹

§ 415. Nearly the same appearances were found in two children who perished in a room which was set on fire. In them, however, the trachea was filled with a dark, frothy mucus, in which particles of soot could be easily recognised. It is probable, therefore, that the immediate cause of their death was suffocation.² After death from burns perforating ulcers of the duodenum are frequently found, especially in young persons. This has been observed by Mr. Curling and also by Mr. Tidy.

CHAPTER III.

SPONTANEOUS COMBUSTION.

§ 419. IN approaching the examination of the question, whether such a phenomenon as the spontaneous combustion of the human body is really possible, we encounter the usual obstacle to the discovery of truth, viz., a doubt of the authenticity of the facts upon which the belief reposes. From a very early period in the history of medical curiosities, instances of apparently spontaneous human combustion may be found on record; but the credulous superstition and love of the marvellous, which, at the period when some of these observations were made, science rather encouraged than restrained, weaken our reliance upon their authenticity. Not having adopted a theory with a desire to find those facts only which might be adjusted to it, but

¹ Schmidtmüller. Henke's Zeitsch., 1848, p. 175.

² Casper, ger. Leich. 2 Hund. 97 and 99 Fälle.

desirous of discovering the real extent of our knowledge relative to the phenomena of what is called spontaneous combustion, we have examined the subject, not without some care and earnestness. The result of this investigation has shown us that if there is not such a phenomenon as the actual spontaneous combustion of the human body, there is sufficient evidence to prove that in some cases it may acquire a preternatural inflammability, and that this peculiarity can be recognised by the trifling source of combustion compared with the rapidity and extent of its progress.

§ 420. We propose to refer only to such cases of so-called spontaneous combustion as have been reported at a comparatively recent date, and by men of standing and authority. The first which we quote is reported by M. Dévergie.¹ A washerwoman named Marie Jeanne Antoinette Bally, fifty years of age, and of intemperate habits, returned to her lodging one evening in December in a state of drunkenness. Her room was not more than ten feet long by six to seven feet wide, and was lighted by two little windows from a corridor. The only furniture consisted of a chair, a chest in the corner, and *muslin window curtains*. There was no bed. The next morning at eight o'clock, the neighbors, perceiving a strong smell of smoke, entered her room, and there found the unfortunate woman upon the floor almost completely burned, with her feet turned toward the chimney-place, in which, however, there was no fire. Under one of her arms there was still a portion of the chair upon which she had been seated, and underneath her an earthen pot, such as is used by the poor to hold a few coals to warm their feet. The chair was almost entirely burned, the floor was covered with a black soot, and an exposed beam in the wall of the room was charred upon the surface. The chest was, however, untouched, as were also the *muslin curtains*, which were only three feet distant from the body. The body was sent to the morgue, and examined by direction of the judicial authorities. The body was lean; the face and hair, the anterior portion of the neck and part of the shoulders were not injured. The skin and muscles of the back were, however, thoroughly burnt, as were also the sides and anterior portion of the trunk. The anus and vulva escaped. Nothing was left of the upper extremities but the bones; there was, however, a portion of the chemise in each armpit still intact. The upper portion of the lower limbs was also burnt. *The stockings were entire.*

¹ Ann. d'Hyg., t. xlv. pp. 383-431.

§ 421. The following is abridged from a case reported by Dr. John Grigor :

The body of John Anderson, a man aged fifty, and of spare habit, a carter of wood from the forest of Darnaway to the pier of Laird, was found dead by the road-side, and so much blackened and charred by the action of fire that it was identified only from the fact of his horses and cart being known. A post-mortem examination was imperfectly made, the result of which was that the eyes, ears and nose were burned away, as well as the hair and skin of the head; the skin and cellular tissue of the trunk were much charred, the thighs not to the same extent, and the burning had ceased about midway between the knees and the feet, where there was a reddish and slightly blistered line. The back was not so much destroyed. This man was a notorious dram-drinker, consuming daily at least a bottleful of ardent spirits, besides, porter, beer, etc. He left Laird on the day of his death intoxicated, and parted company with a brother carter within half a mile of the place where the body was found. "Before this, however, he wished his pipe to be lit and handed to him; but his friend, thinking he had no need of a smoke, merely put a little fire on the old tobacco ash, when he drew, and immediately said, 'She is not in.' The conversation went on for ten minutes, when the poor man turned his horses' heads homewards. All this time the pipe was in his hand. His dress was a woollen shirt, a canvas frock, corduroy trowsers, and a 'wide-awake.' The weather was very warm and dry. When a little further on his way homewards, smoke was seen rising up from the cart in which the man was, and which contained a good deal of hay, by a herd-boy on a neighboring rising ground, about one-fourth of a mile distant. The man was next seen to descend from the cart, to stand, then to stagger and fall. The horses stood still. In a few minutes smoke again appeared, from the ground, when the boy ran down and found the body lifeless, black, disfigured and burning." With the aid of another person water was procured and the fire extinguished. The clothes were all consumed, except the lower part of the legs of the trowsers, and a small portion of the shirt, frock and hat. The pipe was found lying below the body, *with the cap on*, apparently as it had been put into his hands. *None of the hay was burned.*¹

¹ Edinb. Monthly Journ. of Med. Sci., Dec. 1852, p. 555.

§ 422. A well-known and privileged beggar, of 60 years of age, and quite corpulent, accustomed to hard drinking, came on a Christmas evening into a tavern, already intoxicated. There, for a wager, he drank four bottles of brandy, and, being entirely overcome by it, was carefully deposited on the floor behind the German stove, but some distance from the latter, with his head resting on his sack containing bread, in order that he might sleep away his debauch. The remaining guests soon retired. Early in the morning, the landlord was awakened by a penetrating, insupportable smell; he arose, and approaching the public room found the smell still more powerful. The room was cold, and the fire had long before died out. The unfortunate beggar was nearly reduced to ashes, a portion of the face and occiput remained, and the legs below the knee were not burnt, the shoes and stockings being also untouched. His pouch of bread was not consumed, but was covered with a fetid soot. The whole room was filled with the same, and no cleansing afterwards availed to destroy the odor.

§ 423. An old lady of corpulent habit, and 70 years of age, was accustomed to have herself bathed with cologne water and alcohol, and every night before retiring took a so-called sleeping potion of spirituous liquor. Early one morning, as in the preceding case, the neighbors and servants were awakened by a fearful smell, proceeding from the old lady's room. On entering it, her body, completely carbonized, was found upon the floor by the bed; only the hands and feet remained. The floor was not burnt nor the furniture, but everything was covered by a fetid, black and fatty soot.¹

§ 424. Other cases might be cited of equal authenticity with the foregoing, but these, we think, depict with sufficient clearness the phenomena attending this peculiar mode of combustion.

§ 425. In striking contrast with them is the process of *ordinary combustion*, by the prolonged application of fire to the human body. The phenomena attending it are familiar to every one, and have been already described in the foregoing chapter. The effects are purely local, being confined in extent to that portion of the body exposed to the heat, and they cease with the withdrawal or extinction of the burning material, finding no self-sustaining combustible principle in

¹ Beiträge zur gericht. Medicin (with two original observations), by Dr. Schneider, of Fulda. Henke's Zeitsch., E. H. 32.

the body itself. The cause is always evident, and the extent of injury is in proportion to the amount of the fire.

§ 426. If, again, this have been designedly kept up, the quantity of fuel required for such a destruction of the body as is related in the foregoing instances, is enormous. The history of the death-scene of those who have perished at the stake, and the widow-burning in India, sufficiently attest this fact. We might add here the evidence given in the Webster case upon this point. Dr. Strong said: "In the pursuit of my anatomical studies, I have had considerable experience in burning up or getting rid of human remains by fire. Where I had my office, at an early day, in Cornhill, I had poor accommodations for dissecting, and it was frequently necessary to burn up the remains of a subject. Once in particular, I had a pirate given me by the United States marshal, for dissection; and, it being warm weather, I wanted to get rid of the flesh, and only preserve the bones. He was a muscular, stout man, and I began upon it one night, with a wood fire, in a large old-fashioned fireplace. I built a rousing fire and sat up all night, piling on the wood and the flesh, and had not got it consumed by morning. I was afraid of a visit from the police; and by eleven o'clock they gave me a call, to know what made such a smell in the street. I finished it up, somehow, that forenoon; but I look upon it as no small operation to burn up a body."¹

§ 427. Recently the case of Stauff, tried for the murder of the Countess of Goerlitz, gave rise to a discussion of the question of spontaneous combustion, in the course of which certain experiments were conducted by Dr. Gräff, for the purpose of ascertaining the amount of fuel necessary to effect an equal destruction with that observed in that case. The result of these trials was, that as much as one hundred pounds of wood was required to produce even a partial combustion of a human body. In the case of the Countess of Goerlitz, whose body was found in her apartment partly consumed by fire, the heat must have been intense. The secretary near which the body lay was half burned; several chairs further removed from it than was the body, took fire, and the floor underneath it was burned. A mirror on the opposite side of the room, nearly twenty feet distant, was cracked by the heat, and was still so hot when the room was broken open that the hand could not be borne upon it. The heat developed

¹ Bemis's Report of the Webster case, p. 69; *infra*, §§ 781-2.

by the burning of the secretary was so great, that articles of gold and silver, and also of iron, had been melted by it. Yet with such a degree of heat as this, and the body only two feet distant from the burning secretary, the traces of fire did not extend below the chest; the head, neck, and upper extremities being the parts which were chiefly destroyed.

Such cases as these are entirely unlike those well authenticated cases of combustion, where the body has been found destroyed in a greater or less degree by the action of fire, without any apparent external cause, or, at most, with one which has been entirely disproportioned to the effect produced. Could the phenomena in the two sets of cases be properly designated by the same name, it is difficult to conceive how in one the ashes of a pipe, a few smouldering coals, or the flame of a lamp, could cause a greater destruction of the human body, with an immunity of surrounding objects from the action of fire, than in the other the hottest fire was able to produce. Evidently there must be in one case some self-sustaining principle of combustion, a preternatural inflammability of the body, which does not exist in the other. When this has been said, we believe that all has been said which the present state of our knowledge permits.

§ 428. "The most prevalent theory," says a recent intelligent writer,¹ "has been that held by the early writers, and supported by Orfila, Fodéré, Gordon Smith, Paris, Briand, etc., that, under certain circumstances, the body is capable of generating under the skin, and in the connective tissue and cavities of the body, hydrogen, or other-gases similar to those formed in the intestines, and that the electrical condition of the body can sometimes ignite these gases. What these gases are has not been clearly stated; Gordon Smith being of the opinion that carburetted hydrogen is the chief compound; and others, such as Averardi and Apjohn, believing it to be phosphuretted hydrogen.

"Another theory, advocated by Lair, Ritter, Kühn, and Mitchell, and based on the fact that most of the victims of this occurrence have been drunkards, is, that alcohol is present in their blood to such an extent as to be combustible. Now, Liebig and Bischoff say that alcohol cannot be present in the blood and tissues without coagulating their albumen. But this is not true: the author himself has seen

¹ Ogston, Brit. and Foreign Med.-Chirurg. Review, Jan. 1870, p. 179.

cases of death from alcoholic poisoning, or in people under the influence of alcohol, where the smell was strong in the blood, and sometimes so marked in the ventricles of the brain that it was possible to ascertain the nature of the beverage used. Chemistry, too, has frequently detected alcohol in the blood, and, in a case observed by the author's father, there existed so much alcohol in the body that the serum in the ventricles of the brain caught fire and burned on the approach of a lighted match. Marc and Scherf declare that the eructations and breath of drunkards are occasionally capable of taking fire, though this point seems rather doubtful. But even admitting the presence of large quantities of alcohol in the body does not make this theory tenable, as the experiments of Fontannelle, Liebeg, and Bischoff, on flesh soaked in alcohol, sufficiently demonstrate.

"Fifty-seven cases are recorded, some of them dating back two centuries. They may be divided into two classes; in the first of which may be placed those manifestly false, or where the statements bear absurdity on their face, as well as those the truth of which may justly be suspected, until fresh and better evidence shall have been collected to prove or disprove them.

"In the second class may be placed those whose accuracy cannot be denied; and it will be seen from this division that the conclusions based on the authentic cases are very different from those which can be deduced where all the cases, true and doubtful, are admitted indiscriminately as evidence."

§ 429. The cases of the first class, which the author cites, certainly justify him in calling them "worthless data," although they furnish very entertaining reading. An hysterical girl feels a sudden burning in her fingers, and sees a blue flame hovering about them, "visible only in the dark," which cannot be extinguished by water. A blacksmith has a similar experience. A man sees a flash of fire seize on his shirt, which is suddenly reduced to ashes, without his wristbands being touched at all; he cries out, and when help arrives he is found on the floor, surrounded by a light flame (of spirit, spilt over his clothes?) which disappears as his friends approach. A man lies down in bed with his clothes on, and burns spontaneously; his "whole trunk" and thighs are said to be badly burnt—yet, "remarkable to state, at the places where his clothes were completely burnt, the body was uninjured, and *vice versa*."

§ 430. Most of these cases rest upon the authority of the person

injured. It is upon this class alone that the doctrine of *spontaneous ignitability* rests; those to follow, whose veracity cannot be impeached, speak merely for *increased combustibility*.

§ 431. The second class of cases, too truthful in their narratives to be disbelieved, and attested by so many competent observers, present a character differing much from the fables cited above. In the first class, many of the patients recovered; in the second class, the subjects all died; and not only so, but were all *found dead*—their bodies, their clothes, and the articles in their neighborhood, being partially or entirely destroyed by fire, the only remarkable thing about them being that the bodies were burnt and charred out of all proportion to the destruction of the neighboring objects, and to an extent which seems incapable of being accounted for by the heat of the burning clothes and objects in the vicinity. (For illustration, several specimens of cases are cited, from which only one is here presented as follows):—

§ 432. “On the 14th March, 1869, my father and I were requested to examine the remains of Mrs. Warrack, or Ross, aged sixty-six, who resided alone in a house near the Bridge of Dee, Aberdeen. She was said to have been stout, of intemperate habits, and her son stated that he had left her at 10 A. M. on the 14th, in her usual health. She was found at 11 A. M. on the same day, lying burnt on the lower steps of the stair of her house, on her left side. The house was pervaded with a disagreeable smell, but liker that of burning straw than of burning animal matter. The room which she usually inhabited, the door of which was within two yards of the place where she lay, had the same smell; the chair in which she sat stood in the middle of the room, its back almost entirely consumed, and its arms wholly so. The seat of the chair showed mere traces of the action of fire. The bed, about two feet from her chair, had its straw mattress slightly burnt at its fore part. The wood-work of the bed and the curtains were uninjured. Her chair was about four feet from the fireplace, and about two feet from an uninjured mahogany table, on which stood an empty beer-bottle, smelling of whiskey. Nothing else in the room was touched by fire. The stairs were of wood, and underneath, and in the immediate vicinity of where she lay, they were charred to the depth of a quarter of an inch. The perpendicular bars of the hand-rails similarly charred beside her for a foot up, the

top rail and the wall, which was half a foot from the hand-rail, blackened by smoke.

"The condition of the body, however, showed that the fire had caused the greatest alterations in it. The hair was burnt off, the soft parts of the face and front part of the head burnt off, the bones exposed, blackened, and calcined. The back of the head, the neck, and the trunk everywhere converted into greasy charcoal to the depth of about an inch, the skin totally removed, and the bones of the trunk lying bare, blackened, and calcined.

"The front wall of the abdomen totally destroyed and wanting; the intestines burned into a hard and blackened mass; the liver converted into ashes for the depth of an inch, but retaining its shape, its left lobe projecting nine inches from the margins of the ribs.

"The upper limbs distorted; the elbows strongly flexed, and everywhere charred to a great depth, the bones, however, even of the fingers, preserving their position. The right thigh had its deeper muscles still uncharred, but of the appearance of roasted beef, and very dry; the skin and superficial muscles totally burnt away. The right leg only partially attached to the thigh, and entirely converted into a soft, black, greasy, and shapeless cinder, through which the finger could be pushed with ease. The left thigh and leg in a condition similar to that of the right extremity, but still attached to the foot, which was a charred and shrivelled mass similar to the right foot. Not a vestige of clothing remained anywhere."

§ 433. Some authors have fallen into the error of attempting to explain by chemical theories the phenomena of spontaneous combustion, but they have hereby given their opponents the opportunity, not only of easily refuting these speculations, but furnished them with a plausible pretext for denying the correctness of the facts. MM. Liebig and Bischoff have, perhaps, disproved the accuracy of the doctrines which attribute the origin of spontaneous combustion to a saturation of the body with alcohol, unusual, corpulence, and the development of inflammable gases. They allege that as the watery element of the body constitutes seventy-five cent. of its bulk, it must first be dissipated before the latter can burn, that alcohol cannot be present in the tissues without coagulating their albumen, and that it may burn without communicating its flame to the flesh; and, finally, that the evolution of inflammable gases in the living body is either

not a fact, or if it were so, could not explain the alleged process of spontaneous combustion.¹

§ 434. The theory of spontaneous combustion in the living body is untenable in the present state of our knowledge of the laws of combustion. It does not follow, however, that we should reject as unworthy of belief the many curious cases on record.

The following conclusions may be accepted :

1st. That the bodies of habitual drunkards, particularly if corpulent, are more than ordinarily inflammable, so that slight accidents, such as the upsetting of a lamp, or a spark from a pipe, may lead to the ignition and destruction of the body.

2d. That in these cases the extent and gravity of the burns may be out of proportion to the apparent exciting cause. It has been noted in these cases that the combustion of the body may be almost total, while adjacent objects, such as furniture, may have been only slightly or not at all injured. Also that the flame is usually difficult to extinguish. That women are more frequently the victims than men. The deposit of a peculiarly fetid soot upon the surrounding objects has been observed in most instances of this form of combustion.

CHAPTER IV.

HEAT AND SUNSTROKE.

- I. Symptoms, § 437.
- II. Post-mortem appearances, § 443.

§ 437. I. *Symptoms.*—The frequency with which, in this country, fatal results are observed from exposure to heat or the direct rays of the sun, renders necessary some notice of the prominent symptoms and post-mortem appearances characterizing sudden illness or death from these causes. The report of the City Inspector of the city of

¹ Henke's Zeitschrift. Bd. 60, p. 162. Ann. d'Hygiène, t. xvi. p. 383. See also an "Essay on the use of Alcoholic Liquors," by John Chadwick, M.D., London, 1849, where proof is given of the presence of alcohol in the brain of drunkards after death.

New York, alone, shows two hundred and sixty deaths from *coup de soleil* during the summer of 1853, without including many cases designated as "congestion of the brain," and the "effects of cold water." In the city of Philadelphia, during the months of June, July and August, of the same year, the number of deaths reported under this head amounted to fifty-seven; a number which is also certainly much below the true mortality.

§ 438. Rapid or sudden insensibility, after exposure to the intense heat of the sun in summer, usually occurs in those who are engaged in some laborious out-door occupation, but the same condition may result after exposure to artificial as well as solar heat. Dr. Swift, of New York, in his "Observations on Exhaustion from the Effects of Heat,"¹ states that eleven patients were admitted into his hospital from the laundry of one of the principal hotels in that city, and that several were brought from a sugar refinery, where, after working several hours in a close and overheated apartment, they fell down suddenly in a state of insensibility. Upon a comparison of the symptoms and lesions of these with those of the patients who had become exhausted after laboring in the sun, no distinction could be perceived.

§ 439. The immediate cause of the symptoms or of the death of those who are said to be "struck" by the sun is not always the same. In the majority of cases the affection is one depending upon exhaustion from heat with, most probably, some molecular change in the blood, the character of which is not now understood, but which is ascribable to intense heat and prostration from fatigue. In other cases, however, which are comparatively few, inflammation of the brain or its membranes is the result of exposure to the sun's heat, and, occasionally, apoplexy is produced. The symptoms vary, therefore, but a neglected case of the first variety may pass into the second. For interesting details relative to the mode of distinction between exhaustion from heat and *insolation*, we would refer the reader to the paper already quoted, and to a discussion on the subject in the Philadelphia College of Physicians.²

¹ N. Y. Jour. of Med., July, 1854.

² Transactions Coll. Phys., vol. iii. p. 99 *et seq.*; also, Trans. of Med. Soc. of Pennsylvania, vol. iv. p. 112. For the most recent accounts of this affection see Times and Gaz., Dec. 1858, p. 638 : Levick, Am. Journ. of Med. Sci., Oct. 1858, p. 404; Id., Jan. 1859, p. 40; Martin, Lancet, Jan. 1859, pp. 2, 28, 52;

§ 440. Dr. H. C. Wood, who has contributed much valuable information to this subject,¹ considers that there are three classes of cases met with as the result of extreme heat. In the first we find heat exhaustion with collapse, accompanied by a rapid feeble pulse, cool, moist skin with a tendency to syncope. In the second class there are intensely hot and dry skin, rapid feeble pulse and delirium. In a third class, which is rare, we have acute meningitis or phrenitis—true *coup de soleil*.

He believes that the nature of sunstroke is that of a fever, or, in other words, that *coup de soleil* is a fever not dependent upon blood poisoning but upon heat.

§ 441. The following may serve as an example of death from the direct cerebral disturbance. Two women were washing clothes in the sun. One fell down in a state of insensibility, and remained so for twenty-four hours, but finally recovered under free depletion. On recovering, she described her sensation when attacked, as though she had been suddenly struck upon the head. In the other case the attack was precisely similar. The patient died in twelve hours. Upon examination after death, blood was found effused beneath the membranes of the brain.

§ 442. Intense heat of the skin is one of the characteristic symptoms in this affection. In some instances the temperature of the patient reaches 110° F., and in one case, recorded by Dr. Dowler, of New Orleans, the temperature was 113°.

The breathing is always affected, sometimes stertorous, and sometimes deep and labored. In many instances the face and often the whole surface is congested. The motor nervous system is almost always disordered; there are present subsultus tendinum, restlessness and at times partial spasms or general convulsions. In some cases, before death, the patient appears to be completely paralyzed.

§ 443. II. *Post-mortem appearances*.—In four cases (those of heat exhaustion) examined by Dr. Pepper, “the brain exhibited no indications of congestion, and nothing, in fact, of an unusual appear-

Id., March, p. 315; Pirrie, *Lancet*, May, 1859, pp. 505 and 533; Merrill, *Am. Journ. of Med. Sci.*, July, 1859, p. 118; Gordon, *Edinb. Journ.*, v. 985; Longhurst, *Lancet*, Jan. 1860, p. 7.

¹ Thermic Fever or Sunstroke, by H. C. Wood, Jr., M.D., Boyleston Prize Essay. Philada., J. B. Lippincott & Co., 1872. And Philadelphia Medical Times, Aug. 5, 1876.

ance." Dr. P. was, however, struck with the appearance of the heart. In all of the four subjects it was pallid, flaccid and softened, while the other muscles of the body were florid and firm. The lining membrane of the heart and of the large blood vessels was of a very dark, almost purple color. The cavities of the heart contained but little blood, and no coagulum. The examinations were made from six to eight hours after death.¹

§ 444. Dr. Wood found, in all the autopsies made by him, the heart firmly contracted, especially the left ventricle. Some previous observers, for instance, Levick, Pennsylvania Hospital Reports, 1868, and Pepper, quoted above, had noted the heart as being soft and relaxed, while others did not report the condition of the organ. Dr. W. accounts for this difference in the fact that in none of his cases was the autopsy made later than two hours after death. In Dr. Levick's cases the post-mortem examinations were made from thirteen to thirty hours after death; and in Prof. Pepper's cases six to eight hours after death, and, besides, all his patients had been bled before he saw them.

"As the temperature of the body remains above 100° for hours, it is evident that putrefactive changes, often already entered upon before demise, must go on very rapidly, and that probably even three or four hours would afford sufficient time for the relaxation of commencing decomposition to follow the heart rigidity. Moreover, direct evidence of the truth of this is not wanting. It has been experimentally demonstrated² that in animals rigidity of the heart is found directly after death from excessive heat, but that in a few hours it disappears."

This rigidity of the heart and the marked rigor mortis which comes on at an early period after death from sunstroke is from coagulation of myosin.

The other post-mortem appearances are mostly negative. Congestion of the brain or effusion into the ventricles is not of frequent occurrence. The lungs, however, and the right side of the heart are found gorged with dark fluid blood.

Dr. Wood has not observed any change in the blood microscopically, but the coagulability is always impaired to a greater or less degree.

¹ As to signs of death, see *infra*, §§ 540 *et seq.*

² See Boston Journal of Med., vol. x. p. 350.

CHAPTER V.

LIGHTNING.

- I. Symptoms, § 447. . .
- II. Post-mortem appearances, § 449.

§ 447. I. *Symptoms*.—Cases of sudden death from this cause are quite common, and there can rarely, if ever, be any doubt of the agency by which the person is killed. This is usually sufficiently attested by the circumstances. The person may be found dead either in an open place or in a building. The fact of a thunderstorm having occurred, will, of course, be generally known, and the traces left by the electric fluid upon the body and surrounding objects can hardly be misunderstood.¹ It is remarkable that in death from this cause,

¹ It is not impossible that the stroke of lightning should have been neither preceded nor followed by rain and wind, as is usual in thunderstorms. On Sunday, the 2d of July, 1843, about three o'clock p. m., five negroes were simultaneously prostrated by a single stroke of lightning, on a plantation in Georgia. "The sun was shining brilliantly at the time, and a greater portion of the visible hemisphere presented the usual serenity of the summer sky. A singular and rather angry-looking cloud had for a short time previously been observed near the verge of the southeastern horizon, from which occasionally proceeded the low rumblings of very distant thunder. But nothing in the appearance of the heavens betokened the immediate proximity of a thunder-storm, or prepared them for the terrible electrical explosion which followed. Not a drop of rain had yet fallen, and the earth was quite dry. Such was the condition of things when suddenly the whole atmosphere in the neighborhood was momentarily illuminated by what appeared to be a universal flash, which was accompanied, or rather succeeded, by a single astounding report. No dust was observed to rise from the ground, nor any other evidence of mechanical violence. No thunder was heard after this explosion; the cloud quickly dispersed, precipitating only a little rain a few minutes after the accident; and in the course of an hour the atmosphere resumed its usual tranquillity. The five negroes were taken up in a state of insensibility amounting to apparent death. Three of them had been instantaneously killed. In two no marks of injury were discovered; in the third there was a burnt spot about the size of a dollar under the right axilla. The other two recovered. One of these was a woman aged seventy years, and the singular fact is stated that in her the catamenal discharge which had, in the ordinary course of nature, ceased for more than twenty years, was completely, and thus far (about a year afterwards) permanently, re-established. For this and many curious cases and ingenious speculations we beg

as in other kinds of instantaneous death, the body retains the position in which it was performing the last act of life. M. Boudin has collected numerous examples of this fact. According to Carden, quoted by Rivière, eight reapers, taking their food under an oak, were struck by lightning, and died, preserving their attitude—one of a man eating, another drinking. In Lorraine a woman and one of her children were killed, and remained in a sitting posture. At Dover a man killed with four horses was found sitting under a bush. A man of law at Troyes was struck dead by lightning when on horseback. On January 22, 1849, a goat was killed near Clermont, and was found sitting on his haunches, with a bunch of green leaves in his mouth. A woman was struck while plucking a flower, and her body was found standing nearly erect, with the flower in her hand. A priest was killed while on horseback; the animal reached home, a distance of two leagues, his dead master still sitting erect in the saddle. The clothes are torn and burnt; metallic articles upon the person, if in the track of the fluid, are fused; and there will be found upon some part of the person, usually about the head or shoulders, a reddened spot, a lacerated puncture, or a discolored streak, indicating the point at which the electric fluid has entered the body. A great many cases have been reported in which images of trees and other objects have been found imprinted upon the skin of persons struck by lightning or exposed to its vivid glare.¹ The amount of visible injury is generally trifling, and it is said that occasionally no marks whatever are perceived. In the latter case the person is probably killed by the agency of the *returning stroke* or electric shock, his body being the conductor by which the positive electricity of the earth is transmitted to a cloud which has come in near proximity to it. The absence of any external mark of injury may indeed leave us in doubt of the mode by which death has been produced, but it at the same time equally negatives the suspicion of homicidal violence. In such cases death can therefore be attributed only to natural causes, or to those poisons which act rapidly. A post-mortem examination can hardly fail to show to which of these it is due, and, if required, a chemical analysis may be made of the contents of the stomach. These

leave to refer the reader to Le Conte on the effects of lightning, New York Journ. of Med., vol. iii. p. 295; also Hist. Méd. de la Foudre et de ses Effets sur l'Homme, etc., par M. Boudin, Ann. d'Hygiène, 1852.

¹ Poey, Med. Times and Gaz., March, 1857, p. 317; and Boudin, loc. cit.

suggestions are, however, of but little practical importance, since attendant circumstances will, as we have already intimated, enable us to dispense with any examination of the body.

§ 448. Among the symptoms which may occur in those who are not instantly killed by lightning stroke are the following:—

Blindness or impairment of vision.

Deafness or injury to the hearing.

Dumbness or defect of articulation.

Tetanus and epileptiform convulsions.

Paralysis, such as hemiplegia and paraplegia.

Insanity, loss of memory and headache.

§ 449. II. *Post-mortem appearances*.—In the examination of the bodies of two women, one 32 years of age and the other 17, who were struck instantly dead by a flash of lightning as they were seated spinning near the fireplace, the following observations of the *external* appearances were made by Dr. Martin twenty hours after death. In both bodies putrefaction had begun, the abdomen was already distended and of a bluish color, and dissolved blood flowed from the mouth and nose. On one of them the whole surface of the neck and breast was covered with reddish-brown spots, under which, however, the arborescent tracks of the electric fire could be traced, until, uniting into three larger branches, they ended in the left lumbar region, in an oblong burn, of a dark-red color, six inches long and three broad, and penetrating into the substance of the true skin, under which, however, there were no lesions discoverable. The skin was here and there, in the course of the marks, of a parchment-like consistence. On the other body, which was that of the young girl, the electric fluid appeared to have entered over the left temple, as here a tolerably deep scorched spot was to be seen; the eyebrows and lashes on this side were burnt. The skin was striped and spotted, exactly as in the preceding case. The neckerchiefs worn by both these females were torn to rags, but did not exhibit the slightest trace of combustion, nor was any other part of their clothing, or of the furniture of the house, burnt in the least degree.¹ Sometimes, however, there is considerable external injury, the skin being contused and lacerated, but it does not appear that there is ever any actual burning of the skin, unless the clothes have been set on fire by the electric current. The idea that the blood remains fluid in the persons struck by lightning, and that

¹ Henke's Zeitschrift, 1844. p. 193.

putrefaction occurs at a very early period, is not sustained by the observation of all authors upon the subject, but it is probable that such is the general rule in the human subject. It is also generally supposed that rigidity is very slight or is absent after death from this cause. But it is not uniformly so. A case is reported by Maerklin in which cadaveric rigidity began within three or four hours after death, and in the course of twenty-four hours reached a very high degree.¹

Mr. C. Meymott Tidy² has examined into a large number of cases where death has occurred from lightning. He finds that the brain and membranes usually suffer severely. At the seat of injury blood may be found effused under the skull.

The lungs have been found congested and a generally congested condition of the abdominal viscera has been observed. This writer states that burns and blisters of the surface of the bodies of those who have been struck by lightning, are often seen.

CHAPTER VI.

COLD.

- I. Symptoms, § 450.
- II. Post-mortem appearances, § 452.

§ 450. I. *Symptoms*.—Where the body of a person is found who is supposed to have perished from exposure to cold, the chief inquiries which require attention are whether the cold was the sole cause of death, and, if not, what were the additional causes, or whether the disease or injury, if any, was not in itself suddenly fatal; the cold having had nothing to do with the result.

§ 451. The effect of intense cold upon the human body is too familiar to need illustrating. After prolonged exposure to its influence, the whole body becomes benumbed, the respiration oppressed, and the head

¹ Casper's Vierteljahrs., xvi. 332.

² Legal Medicine, p. 509.

heavy. Perception and sensation are obtunded, the mind wanders, an invincible lethargy steals over the senses, the limbs become paralyzed, and the unfortunate person, overcome with drowsiness and exhaustion, sinks down into apparent death. Unless speedy relief is afforded, this condition soon merges into real death. According to Larray, death is preceded by a general pallor, stupor, difficulty of speech, dimness of sight, and sometimes a total loss of these functions. In the retreat from Moscow, some men, he says, led by their comrades, were able to march for a considerable time in this condition. But their limbs soon refused to support them, they reeled like drunken men, and fell benumbed and lethargic, and soon expired. Almost all the men who perished in this manner were found lying with their faces to the ground.

§ 452. II. *Post-mortem appearances.*—The *post-mortem* examinations which have been made of persons dying from cold, have shown that the most constant appearance is an extreme congestion of the venous system in the principal organs of the body, but especially in the brain. Serous effusion into the ventricles, or under the arachnoid, is met with. Dr. Kellie observed it in two cases, and Professor Blosfeld mentions it in three of six cases of death by cold.¹

Such are the only positive results of *post-mortem* investigations. Unless the examiner knew the circumstances in which the body was found, which favored the supposition of death from cold, he could not possibly assert from these signs that death had resulted from this cause. Practically, therefore, they are of little importance except in those cases in which, from the absence of other injuries, and of serious disease, and from a knowledge of the circumstances under which the body was found, the cause of death is already rendered probable. Adults, who perish in this manner, are generally either intoxicated or else helpless and infirm. The intemperate, the aged, or those whose nervous energy is exhausted by long watching, fatigue, hunger, or depressing emotions, succumb to this form of death much more speedily than the temperate and vigorous. Children, and above all, infants, can sustain only a moderate degree of cold. Hence intoxication, old age, and privation, as well as actual disease, must be enumerated as predisposing causes of death from cold.

¹ Beck's Med. Jour., vol. ii. 68; Henke's Zeitschrift, 1845, p. 245. One hundred legal autopsies made in the Institute for instruction in Forensic Medicine in the Russian University at Kasan.

§ 453. If marks of violence be found upon the body, they must be judged according to the rules already laid down in the chapter on wounds. If necessarily mortal, the influence of cold need not be considered, but in all other cases it is obvious that cold must have greatly accelerated the fatal result. The same remarks are applicable when the subject is very young. It must be remembered, however, that cold itself may here be more readily employed as a homicidal agent, and that possibly the other marks of ill-treatment may be few or none. An atrocious case of murder by cold has been frequently quoted, on account of the rarity of examples of the kind. A man and his wife, at Lyons, were tried for the murder of their daughter, a girl aged eleven, under the following circumstances. On the 28th of December, at a time when there was a severe degree of cold, the female prisoner compelled the deceased to get out of her bed, and place herself in a vessel of ice-cold water. The deceased complained of exhaustion and dimness of sight; the prisoner then threw a pail of iced-water upon her head, soon after which the child expired.¹

CHAPTER VII.

STARVATION.

- I. Mode, § 454.
- II. Period, § 455.
- III. Symptoms, § 457.
- IV. Post-mortem appearances, § 458

§ 454. I. *Mode*.—A person may starve himself to death; he may perish from the want of food, being unable to procure, to swallow, or to digest it, or he may purposely be deprived of it. Medical evidence can only attempt to establish the fact of death by starvation, and can, in many cases, indicate the physical cause of it, but cannot, of course, determine whether the act was voluntary or homicidal. In the case of young children, however, homicidal intentions may be

¹ Ann. d'Hyg. 1831, p. 207.

inferred, while in adults, on the contrary, starvation is mostly a suicidal act.¹ The *mode* of starvation is not always the same. In some cases the privation of suitable nourishment is gradual, and death ensues only after a considerable period; in others, although no solid food is swallowed, life is prolonged by the use of a little water, and in others, again, after a variable period of total abstinence from food or drink, the imperative demands of nature are gratified, perhaps too freely and too late to save life.

§ 455. II. *Period.*—The *period* at which *death* ensues after starvation is, therefore, dependent not only upon the age and constitutional powers of the individual, but also upon the foregoing varieties in the manner in which it is effected. It cannot be determined with precision. Wonderful examples of prolonged abstinence may be found in abundance in the older works, and are not wanting in our own day. But the numerous instances in which trickery has been detected should make us wholly incredulous of their genuineness. Instances of abstinence for months, and even years, are gravely related; but it is probable that there is no well-authenticated case of entire abstinence from food and drink for more than thirty days, while on the other hand it is highly probable, that, in the majority of cases, death takes place within a week or ten days. Dr. Gadermann reports a case, however, in which for twenty-three days all liquid or solid nourishment was refused, the person being bent upon self-destruction. At the end of this time he ate and drank greedily, which did not, however, avail him; he died shortly afterwards. The body was almost a skeleton. In this case, the author says, there could not be the slightest suspicion of deception.² Professor McNaughten has published a case where a man lived fifty-four days on water alone.³ In another case, of a prisoner at Toulouse, who resorted to starvation to avoid punishment, life was prolonged to the fifty-eighth day. He drank water occasionally. Valentin refers to the case of a woman who lived seventy-eight days on water and lemon-juice.⁴ In another case a man lived sixty days on a little

¹ A case is related in Henke's *Zeitschrift*, lxxxix. 147, in which a man seventy-seven years old was killed by ill-treatment and starvation. His assassins were his own daughter and his son-in-law.

² Henke's *Zeitschrift*, 1848, 3 H.

³ Am. Journ. Med. Sci., vi. 543.

⁴ Lehrb. der Physiol., vol. i. p. 218.

water and syrup of orgeat.¹ A man aged 56 years was accidentally shut up in a coal mine. He remained there twenty-three days before he was discovered, almost completely exhausted. He had been able to procure a small quantity of dirty water during the first ten days of his confinement. Notwithstanding every effort was made to save him, he died three days after he was found.²

§ 456. Two very interesting cases of prolonged abstinence in persons afflicted with slight mental derangement, or melancholy, are related by Dr. Taylor, of Ohio. In one, after two periods of fasting, of ten and fourteen days respectively, during the last of which he took neither food nor water, this gentleman, on the fifteenth day, took a little water, and then at intervals a small quantity of milk in it. He died about one hundred days afterwards, having lived in "an almost constant state of abstinence." In the other, a little water was taken on the twelfth day after complete abstinence from food and drink, and a gill every twenty-four hours afterwards for thirty-nine successive days, when he died. For the last seventy-two days prior to his death, he had no fecal evacuation, but passed urine in small quantities every three or four days.³

Under the subsequent topic of "Priority of death," or "Survivorship," a case will be found of a party of miners who survived over fourteen days without food, without any permanent serious consequences.

§ 457. III. *Symptoms.*—“Dr. Donovan gives the following description of those who suffered from the Irish famine in 1847. They described the pain of hunger as at first very acute, but said, that, after twenty-four hours had passed without food, the pain subsided, and was succeeded by a feeling of weakness and sinking, experienced principally in the epigastric region, accompanied with insatiable thirst, a strong desire for cold water, and a distressing feeling of coldness over the whole body. In a short time, the face and limbs became frightfully emaciated, the eyes acquired a most peculiar stare, the skin exhaled a peculiar and offensive fetor, and was covered with a brownish, filthy-looking coating, almost as indelible as varnish. The sufferer tottered in walking, like a drunken man; his voice

¹ Archiv. gén., xxvii. p. 180.

² Lond. Med. Gaz., xvii. 389.

³ Am. Journ. Med. Sci., Jan. 1851. In the same place will be found some references to remarkable cases of abstinence by the editor, Dr. Hays.

became weak, like that of a person in cholera; he whined like a child, and burst into tears on the slightest occasion. In respect to the mental faculties, their prostration kept pace with the general wreck of bodily power; in many there was a state of imbecility; in some, almost complete idiotism; but in no instance was there delirium or mania, which is often described as a consequence of protracted abstinence among shipwrecked mariners."¹

§ 458. IV. *Post-mortem appearances.*—In a child, six months old, which was starved to death by its mother, the following conditions were observed: Excessive emaciation; the body weighed only six pounds and a half, and the thickest part of the thigh measured only an inch and a quarter in diameter. There was no fat anywhere to be found, not even in the omentum, and only a small amount of blood in the body. There was no food in the stomach or intestines. A trifling quantity of old and hardened feces remained in the rectum. Extreme contraction of the stomach and all the intestines existed.²

§ 459. Wildberg examined the body of a man 50 years of age, who died of hunger, seven days after being buried in the ruins of a fallen house; he was known to have been healthy before the accident. The body was extremely emaciated, being reduced almost to a skeleton; the eyes stood open and were highly injected; the mouth and tongue exceedingly dry; and the abdomen so flat, that the anterior wall lay almost in contact with the spine. Although the body was still fresh, it exhaled a peculiar penetrating fetor, different from that of putrefaction. The lungs were shrivelled and of a yellowish-white color, the heart small and flaccid, and a small quantity of loosely coagulated and highly offensive blood was found in it and in the great vessels. In the abdomen there was not a trace of adipose tissue remaining; the stomach was very much shrunken, and contained a little dark and viscid liquid. The mucous surface was corroded in several places. The intestines were pale and contracted, and entirely empty, with the exception of a little greenish fluid in the small intestine, and in the large a very small quantity of dry excrement.

The liver was pale, the gall-bladder very much distended with thick, dark-brown bile, which, exuding through its coats, had tinged all the neighboring viscera. All the other abdominal organs were small, flaccid, and contained but little blood; in the bladder, the internal

¹ Taylor, Med. Jur., from Donovan, Dub. Med. Press, Feb. 1848.

² Rothamel, Henke's Zeitsch., 1845, 3 H.

coat of which had an inflamed appearance, there was found a little dark and fetid urine. The brain and its membranes were extremely anaemic, and the former firm and dry. In addition to this description it may be stated that Dr. Donavan found, in some cases inspected by him during the Irish famine, a peculiarly thin condition of the small intestines, "which, in such cases, were so transparent, that if the deceased had taken any food immediately before death, the content would be seen through the coats of the bowel; on one occasion (at an inquest) he was able to recognise a portion of raw green cabbage in the duodenum of a man who had died of inanition." The above description from Wildberg, coincides very closely with the statements of other observers, and may probably be assumed as correct where there is no other cause of death present. It is further substantiated by the observation of Casper, in a case where, from occlusion of the mouth by disease, death took place from hunger.¹

§ 460. In 1869, a girl, 12 years of age, in Carmarthenshire, Wales,² excited a vast amount of interest from the statement that she had lived for two years without eating or drinking, except a drop of water which was placed on her lips every few days. It was also asserted that nothing was evacuated from her bowels; but that every nine days she passed a drachm or two of urine. She occasionally had "swooning fits." The parents positively denied that any food was given her, and many persons believed their account of the case. The girl was confined to bed, but looked fat and rosy.

§ 461. At the request of her father, who expressed a strong desire that the case should be investigated, a committee, consisting of the vicar of the parish, a surgeon, and several gentlemen and respectable farmers, met and determined to have the girl closely watched. For this purpose four nurses were sent from Guy's Hospital, London, one of whom was to be in constant attendance on the case. The watching began on Dec. 9th, and ended with the girl's death on Dec. 17th, 1869. On December 11th, she is reported as not looking as well as usual, but up to the 14th she is stated to have been cheerful and amused herself with reading. On December 12th stains of excrement were observed on her dress. On the 13th she passed a large quantity of urine, and on the 14th and 15th smaller amounts were voided.

¹ Casper, Gericht. Lichenöff, 2tes Hundert. Fall. 99.

² Lancet, 1869.

For three days before death her extremities were cold, and during the last two days she was very restless. She asked for no food and made no confession of imposition. There was no attempt made to force her to take food, but it was offered to her on the day of her death. "She made no reply, but appeared to go off in a fit." On the same day her father refused to allow the surgeon in attendance to give her food, but afterwards, "when it was too late," he consented.

§ 462. At the *post-mortem* examination made by Mr. J. Phillips and Mr. Thomas¹ the following appearances were noted:—

"*Exterior.*—Hair nearly black, long and plentiful; eyes very sunken, pupils dilated; very handsome features; left cheek still florid; chest and body generally well developed; mammae slightly so; arm-pits and pubes showing precocious puberty; right shoulder more developed than left; left axilla more than usually hollow, as if a bottle or hard substance had been kept there; thighs well rounded, but the legs below the knee small in proportion—less developed than the thighs; soles of the feet soft, bearing no evidence of being used for locomotion. * * * *

"*Head.*—On removing calvarium, found the vessels on the surface of brain turgid, the membranes quite healthy, brain beautifully developed, the anterior lobes especially, cerebellum of ordinary size (on cutting into the substance it was found firm, having a large portion of cineritious matter, a few red spots only visible on the cut surface); ventricles empty, base quite normal, containing no fluid.

"*Chest.*—Lungs collapsed, free, rather small, but quite healthy in color and touch. Heart in every respect natural; pericardium containing no fluid or adhesions.

"*Abdomen.*—The whole alimentary canal free from any thickening or contraction, and perfectly healthy throughout. Stomach of ordinary size, containing no food, but about half an ounce of a thickened acid-mucous exudation; duodenum contained a little of the same fluid tinged with bile; jejunum also a little of the same fluid, as well as the ileum, where it became slightly grumous. Five half-grown lumbrici, and one full-grown, were in the ileum. In the cæcum the fluid became thicker but same in character. Colon fairly distended with gas, and, with the rectum, contained about eight ounces of hard-

¹ Medical Times and Gazette, Jan. 8, 1870, p. 45.

ened faeces—not in one spot, but diffused through its entire length. Anus pervious, having a little thickened mucus therein; bladder empty; uterus small, but quite healthy; spleen normal, also kidneys and liver; gall-bladder distended with healthy bile; omentum contained a little fat. The body measured fifty-three inches in length; and under the integument was a thick layer of fat; from half an inch on the thorax to one inch on the lower portion of the abdomen."

§ 463. It may be mentioned that the parents of the deceased girl were tried for having caused her death. The father was sentenced to imprisonment for twelve months, and the mother for six months, it being represented that she acted under the orders of her husband.

§ 464. In estimating the value of the post-mortem appearances, as evidence of death from starvation, it should be remembered, that, unless there is absence of disease sufficient to have induced the emaciation and anaemic condition described, death cannot be attributed to starvation as its cause. There are many diseases which would produce a similar condition of the body—some by mechanical obstruction to the ingestion or chylification of the food, and others by their baleful effect upon the system generally. Hence, the medical witness should be extremely cautious in attributing, upon the grounds of a post-mortem inspection alone, the death of the individual to starvation, especially if the person have been the subject of any chronic disease.

CHAPTER VIII.

SUFFOCATION.

- I. Post-mortem appearances, § 466.
- II. Accidental, § 469.
- III. Suicidal, § 471.
- IV. Homicidal, § 474.

§ 465. ALTHOUGH the general definition of this word may not improperly include all those modes of death in which the respiration is mechanically prevented, yet, as hanging, strangulation and drowning require a separate consideration, it remains for us here to speak only of those modes of suffocation not elsewhere discussed. These are exceedingly numerous, and comprise all those cases in which by any means air is excluded from the larynx, or the chest prevented from expanding to receive it.

§ 466. I. *Post-mortem appearances.*—These, as Casper has pointed out, will be found to differ more or less according to whether death has been sudden or prolonged, whether it was produced by syncope or by congestion of the internal organs, and whether the person was scantily or abundantly furnished with blood. Lividity and turgescence of the face, fluidity of the blood, and sanguineous engorgement of the thoracic and abdominal viscera are the general and most constant features. Casper pronounces erroneous the opinion that cadaveric rigidity is absent after death by suffocation, and declares that it exists neither more nor less than in other cases. The heat of the body, and particularly of the internal organs, is of longer duration than usual; the blood is uniformly more liquid, and of a darker color, than is usual except after death from putrid fevers, septic poisons, etc., and hence it flows more abundantly when sections of the vascular organs, as the brain, are made. Bloody infiltration of the eyes and eyelids, and minute ecchymosis of the neck and chest, are common.¹

¹ The following case proves the necessity of caution in regard to the significance of such spots. A watchmaker, aged fifty years, was found dead upon the floor of his chamber, at nine o'clock in the evening. He had not been seen since the previous evening. During the day several persons had knocked at his door in vain, and it was at last perceived that a forcible entrance had been

The lungs, according to Casper, are generally engorged, as well as the right side of the heart and the pulmonary arteries, while the left cavities of this organ contain little or no blood. M. Tardieu, on the other hand, declares that in general the lungs do not present the characters usually attributable to asphyxia, being in the majority of cases of moderate volume, rosy or even pale, and sometimes engorged about the base and posterior portion.¹ Underneath the scalp and the pulmonary pleura, on the lining membrane of the heart and aorta, and in the mucous membrane of the larynx and trachea, within and upon the thymus gland, bloody points, spots and stripes, resembling ecchymoses, but more strictly circumscribed, may be found, which are probably due to the efforts of inspiration made when no air can enter the lungs, and when of course the struggle to breathe forces the blood through the walls of the vessel. The permanence of these spots renders them valuable signs. M. Tardieu found them under the pleura of a foetus which had been for ten months in a privy well.

§ 467. A recent report (*Lancet*, August 31st, 1878) of a committee of the Société de Médecine Légale, on the value of sub-pleural ecchymoses as a positive evidence of death from suffocation, shows that they are not to be regarded as infallible proof of death from this cause. They report that pleural ecchymoses may arise from conditions irrespective of the cause of death; that they may be met with in violent asphyxia from hanging, strangulation, drowning and by suffocation, but in different degrees, and that they are of value only when associated with other signs indicating the mode of death.

§ 468. Frequently, but not in every case, a pale-reddish foam is found in the trachea and bronchia, the lining membrane of which is pale or dusky, according to the condition of the lungs. Congestion of the kidneys is another and peculiar indication of this mode of death. On the other hand, projection of the tongue between the teeth

made. This circumstance suggested that the man had been assassinated. On examining the body, no trace of violence was discovered, but upon the neck and chest were many spots resembling those of purpura; no similar spots were found in the pleura. The brain and lungs were strongly congested, and the tongue and lips were wounded by the teeth. It was clear that death had occurred in an epileptiform attack, and the man was found to have formerly been subject to this disease. Robbers, supposing the occupant of the room absent, had effected an entrance, but, probably alarmed at the sight of the corpse, had fled.—*Annales d'Hygiène* 2ème sér., iv. 389.

¹ *Annales d'Hygiène*, 2ème sér., iv. 378.

is far from peculiar to death by suffocation, and the same remark is true of foam upon the lips. It is evident that the greater number of these signs are valuable only in proportion to the freshness of the body ; when once decomposition has set in, they gradually lose their distinctness and their significance. It will be observed, also, that the above signs are those merely of asphyxia in general. In hanging, strangulation and drowning, there are one or more signs characteristic of the agent by which life is extinguished, the presence of which, together with the general signs of this kind of death, is almost if not quite conclusive. But in other modes of suffocation, if any trace of the instrumentality by which death was produced is found, it will be most probably due, in homicidal cases, to haste on the part of the assassin, and yet cannot afford any addition to the medical evidence. Thus, if a person have been smothered with the bedclothes, or suffocated by a hand held before the mouth, or by compression of the chest, a distinct and satisfactory indication of the fact will seldom be had. For this reason the medical examiner will often be at a loss whether to ascribe the death to natural or to violent causes. The case may be one of apoplexy, of faecal disease, or of pulmonary congestion, or may be due to a variety of accidental causes, not apparent without a careful inspection of the body. This must, therefore, in all cases where it is important to remove doubt, be conducted in the most careful and searching manner. The absence of any characteristic mark to indicate the mode of death gives a latitude to conjecture, and to the proposition of general questions, which, in case of trial, will seriously embarrass the physician. If no accidental cause, such as a foreign body in the larynx, nor any evidence of disease fatal by the production of asphyxia be discovered, the physician should still be guarded in his opinion, and leave the explanation of the manner of the death to those whose duty it is to investigate the collateral evidence. This is of greater weight than the medical testimony, for while the physician has merely to declare the probability of the person having died suddenly by suffocation, the collateral evidence must establish the instrumentality by which the act was done. In cases where marks of other violence are found upon the body, or the hands and feet are tied, these facts will, of course, require an interpretation from the medical witness. When a dead body is discovered in sand, earth, ashes, or similar substance, the question whether the person was alive or dead when placed there, must arise. From experiment and obser-

vation, M. Tardieu concludes that if the substance has reached the oesophagus or stomach, it must have been during life; and that if the body was buried after death the substance will seldom penetrate beyond the entrance of the mouth and nostrils; some traces of it may occasionally be found in the fauces, and quite exceptionally in the air-passages, but in the oesophagus and stomach, never.

§ 469. II. *Accidental suffocation*.—M. Tardieu distributes cases of suffocation into four groups: 1. When the mouth and nostrils are obstructed by the hands or other foreign body; 2. When death is produced by pressure upon the chest or the abdomen; 3. Burial in earth, sand, ashes, snow, etc.; 4. Inclosure in a narrow space, as a box or closet, etc. The modes in which accidental suffocation occurs are very numerous. They bear, however, only upon the question of survivance. In those cases in which persons are buried alive under banks of earth, covered up in the ruins of falling houses, or in any way confined in a narrow space in which the air becomes unfit for the sustenance of life, they perish by suffocation.

§ 470. Those, however, in which a foreign body becoming impacted in the air-passages causes death by suffocation, are more important, because the cause of death is not at all suspected. This accident happens usually from over haste in eating, but an instance has been reported in which it occurred probably during the act of vomiting. The case was an unusual one, from the fact that the man who fell a victim to the accident was entirely alone at the time of his death. Hence, a suspicion of violence might have been entertained, had not the evident cause of death, the vomited food, been found in the larynx.² A case of fatal asphyxia has occurred from the detachment of a diseased bronchial gland which became impacted in the larynx,² and another, in which a lumbricus ascended from the stomach and

¹ Henke's Zeitsch., 1853, 4 H. A similar case may be found in the Ed. Med and Surg. Journ., April, 1844, p. 390, and a more recent one in the Lond. Times and Gaz., April, 1859, p. 419. In a case related in the Lancet (March, 1850, p. 313), a person having died suddenly after eating, previous to which he had been engaged in a scuffle, the man with whom he had been fighting was arrested on the charge of manslaughter. A post-mortem examination disclosed the cause of death to be a piece of meat wedged in the throat. The prisoner was therefore discharged.

² Edwardes, Med.-Chir. Trans., xxxvii. 151.

entered the larynx.¹ A case is recorded of a child,² three years of age, who while eating her dinner was suddenly seized with symptoms of suffocation, the face becoming turgid, the lips livid, and the respiration seemingly arrested. A probang was passed to the stomach, and tracheotomy performed, but no reaction took place. On examination after death, a constriction of the lower part of the oesophagus reducing its calibre to that of a quill, was found, but the stomach was filled with food. The vertebræ from the fifth to the ninth dorsal were softened or broken down, and the corresponding portion of the spinal marrow was surrounded with scrofulous matter. In this disease the cause of the suffocation probably originated, but its mode of action cannot be explained. The case, however, supposing it to be accurately reported, presents a mode of suffocation hitherto without example. Children are peculiarly liable to suffocation from the introduction of peas, marbles, etc., into their mouths. In the great majority of these cases, however, as well as in those of sudden death from diseases which leave the aspect of suffocation upon the body, the cause of death will be known, and no examination required. Cases also sometimes occur in which persons, helpless from age, infirmity, or intoxication, are found with their face buried in dust, snow, and other substances. The cause of death is here self-evident, since the slightest effort would have enabled the person to escape. Still another form of accidental form of suffocation may be mentioned as occurring to young children, in being overlaid by persons with whom they sleep.³

§ 471. III. *Suicidal suffocation.*—The possibility of suffocation being made a voluntary act, is undoubted; but this mode of suicide must be extremely uncommon. The only manner in which, without the aid of others, it has been accomplished, is either by an alleged retroversion of the tongue (a power which few if any possess), or by a mechanical obstruction of the mouth and fauces, with various articles. In the latter case, the presumption will, of course, be in favor of homicide. Several instances of the sort referred to are related by Dr. Taylor, who also quotes the remarkable case of a woman who placed herself in bed under the bedclothes, and desired her young

¹ Aronsohn, Arc. Gén., October, 1855, p. 475.

² Times and Gaz., July, 1855, p. 88.

³ The Prussian penal code provides punishment by imprisonment for mothers and nurses who take children under two years of age to bed with them.—*Casper.*

child to pile several articles of furniture upon her. When found, some hours afterwards, she was dead.

§ 472. One of the most remarkable cases of suicidal suffocation occurred in Germany. It is related by Dr. Roth, and the following is an abridgment, in the Lond. Med. Gaz., from the original, in Henke's *Zeitschrift* :—

The deceased was well formed, about the middle height, and about 25 years of age. She had been seen to retire to her sleeping-room, at nine o'clock one evening, in her usual state of health and spirits. The apartment was only separated by a partition from the one in which her master and mistress slept, and was over a room occupied by others of the household. At half-past five o'clock in the following morning, the master knocked against the partition to awaken H., but, receiving no answer, supposed she had risen and gone out to her work. On getting up, however, he found all the doors and windows of the house closed, when he went into the servant's room, but did not find her there. On the bed was an axe of a peculiar shape, employed in that part of the country for clipping off branches from the trees, and which used to hang behind the door. The blade of the axe rested against the back of the bed, and the handle on the bed. Beside it lay the best bonnet, which she used to keep in her chest. The bed appeared to have been slept on. After searching the well, lest she had drowned herself, H.'s father was sent for, from a neighboring village. On his arrival, he suggested that the chest should be opened to learn in what trim his daughter had left the place. Finding the chest locked, and the key missing, a blacksmith was got to force it open, when the body of the servant was discovered in the chest, lying in a prone position, on the left side, with its knees drawn up, the upper extremities flexed, and the missing key grasped in the right hand. The chest was about four and a half feet in length, and of proportionate depth. It locked itself on the fall of the lid, and could not be opened from the inside. The corpse was nearly dressed, and the vest (camisole) was put on with its inner side out. On the following day, the body, which had been removed and laid on a bed, was viewed by the reporter. The cuticle was abraded and reddish-brown at seven or eight points, about the centre and upper part of the forehead. The largest of these abrasions corresponded with the thick part of the axe, and underneath them, the integuments were slightly swollen and bluish. The face and upper part of the chest were

mottled with cadaveric lividity, the ears were blue, the eyelids closed, the conjunctiva injected, and the pupils dilated. There was bloody froth about the lips and nostrils, partly dry, partly fresh, and giving this part of the face a blood-stained appearance. Bloody froth was issuing at the time from the right nostril. The mouth readily opened, showing the tongue in its natural position. The key was still grasped in the right hand. With the exception of the abrasions on the forehead, no traces of injury were detected on the body. The clothes were entire.

§ 473. From the foregoing circumstances, the reporter was of opinion that the deceased had employed the axe which hung in her room, to kill herself, in the way she had seen others slaughter oxen, and that, failing in the attempt, and, perhaps, ashamed of the injuries on her forehead, she had then shut herself up in her chest and perished by smothering. This conclusion satisfied the law authorities so completely, that they decided that there was no necessity for making a *post-mortem* inspection.

Dr. Wossialo relates the following remarkable case: A young woman about 20 years old, who had given birth to an illegitimate child seven days before, died suddenly. Poisoning was suspected, but this was negatived by the autopsy. The signs of death, however, by suffocation were very distinct. The eyes protruded, the face was swollen, the tongue projected between the lips. The outer surface of the neck was in vain examined for any sign of strangulation; but a large ball of hay, the size of a goose's egg, was found in the throat, reaching down into the pharynx at the back of the larynx, and just visible when the mouth was widely opened.

There was no doubt that this was the cause of death; the question was whether the case was one of suicide or murder. She had just left the room in which were several persons. The mistress of the house went out to seek her, and saw her standing on the floor of a hay-loft, and noticed that she trembled and breathed with difficulty. When the girl was asked what was the matter, she made no answer. The woman, therefore, called her son, and they got her down through a hole in the floor of the loft, and led her indoors. Several women were present, and they thought she was in a fit; she was blue in the face, trembled in the hands and feet, rolled her eyes, and from time to time opened her mouth as if gasping for breath. After about a quarter of an hour she died.

In spite of the improbability of the thing, there was no doubt that this was a case of suicide. There were no marks of violence, and the people in the house heard no cry. She had also full opportunity of calling attention to the cause of her sufferings when she was first found standing in the loft.¹

§ 474. IV. *Homicidal suffocation.*—Those who are usually the victims of this form of murder are infants and the aged, or those who are otherwise helpless. So slight a degree of resistance is necessary to defeat the purpose of the assassin, that a great disproportion of strength must exist for the attempt to be successful. Nevertheless, those miserable wretches, Burke and his accomplices, reduced murder by suffocation to a system, choosing it as the mode of death most likely to leave no marks of crime behind it. The murderer bore with his whole weight upon the breast of his victim, and with his hands covered forcibly the mouth and nostrils till death came on. The body of one of the victims presented, according to Dr. Christison, so few traces of injury, that without the assistance of proof from other sources, it would have been impossible to have declared that the death was not a natural one. In a case related by Dr. Casper, the body of a rich old lady, who lived in one of the most frequented streets of Berlin, was found one morning, in her bed, her head buried among the pillows, and heaped over with bedclothes. Her hands were tied fast behind her back, and her legs bound together by a band, including also her underclothing. The room being warm the body was rapidly decomposing, the head was blackish-green, and the epidermis was loose. At the same time the eyes were prominent and injected, and the tongue swollen and protruding. Some marks were found upon the neck, which, being hard and distinct in color from the surrounding skin, were thought to indicate an attempt at strangulation. Everything was in the greatest disorder in the chamber, the drawers and cabinets being rifled of their contents. The opinion of the examiners was that death resulted from asphyxia, produced both by strangulation and suffocation.²

¹ Vjhrschrift. f. ger. Med., N. F. I., p. 293; Year-Book of Med. and Surg., 1864, p. 458.

² The following is an interesting case in this connection; it is reported by Dr. Charles A. Lee, in the N. Y. Journal of Medicine, July, 1844:—

A case of trial for murder by *suffocation*, lately came before the Court of Oyer and Terminer of the City of New York, Judge William Kent presiding, in which

§ 475. Still another circumstance under which death may be accomplished by suffocation, will be found in some cases of rape.

William Leitga, the prisoner, was accused of thus destroying his wife, and afterwards setting fire to her bed, by which the body was considerably burned before the fire was discovered and arrested. It appeared in evidence that they had lived very unhappily together, both being addicted to habits of intemperance, and had been quarrelling at one or two o'clock in the morning on which the fire took place (it being discovered about six o'clock). The deceased was found lying on a cot, a little on her right side, with a large pillow over her feet, but not covering the whole head; the arms bent up and lying across the breast under the pillow, which was partly burnt—her limbs were burnt to the knees, and also her right arm, the rest of the body not much burnt—the countenance was distorted, the eyes open, and the tongue protruded from the mouth nearly an inch. The cot on which she lay was about four feet from the stove; there was no appearance of fire between the cot and the stove; but everything showed that the fire had commenced at the foot of the cot and worked up; an empty lamp lay on the floor about three feet from the foot of the cot; bedclothes were lying about the room, and everything indicating that there had been a violent quarrel. As the testimony of Dr. Rodgers contains the principal facts in this case, we present it in detail:—

Dr. James L. Rogers testified, that he "saw the body about 8 o'clock in the morning of October 29th 1843; the body was slightly inclined to the right: the arms were up, inclining to the breast, but not on it; the lower part of the right arm and hand were burnt to a crisp; the hair was burnt off the top of her head; the left cheek was burnt on a place about as large as half a dollar; the transparent part of the left eye was scorched; the body was burnt across the stomach down; below the knee the flesh was burnt almost entirely off—above the knee to the abdomen, it had the appearance of a ham being smoked; there was no burn on any other portion of the body except the left ear; the mouth was not burnt; the tongue protruded; the countenance perfectly calm; no mark was perceptible about the neck or any other place, except a small flesh wound in the right side of the eye. On dissection, the brain was found perfectly natural—stomach also healthy, containing about two spoonsful of liquid matter; the bowels were perfectly healthy, as were the kidneys, except that they all appeared somewhat congested; the lungs and heart were healthy, but the vessels of the lungs were deluged with dark venous blood, as was the right side of the heart; the left side of the heart was nearly free of blood."

The District Attorney asked, What was his opinion of the cause of death?

Witness: "In the absence of all natural causes, of which there were none, I should say she died from stoppage or prevention of air from the lungs; it may be called *suffocation*, the same appearances would be produced, either by the breath being stopped by something placed over the nose and mouth, or by drowning. I observed no appearance of intoxication; I think I never examined a body where there was a more healthy appearance than that presented. Where there is a dense smoke of carbonic acid gas from the burning of char-

An instructive example of this kind will be found in the following German case. In it, the subsequent confession of the criminal con-

coal, the same appearances of the lungs and heart would exist in some measure, but not so fully, as the air in such cases continues partially to have effect. The fact that one eye was burnt, the placid state of the countenance (this was denied by other witnesses who first saw the body, and can hardly be presumed from the protruding of the tongue, etc.), and the position in which she lay, led to the conclusion that she must have died before the fire. The probability is, that, if the person had been alive when the fire reached her, she would have shut her eyes, and one of them would not have been burnt. There was no blister in the eye, as there would have been, had it been burned during life. There was also no red line on the body to where the fire came, which is also a very certain sign of burning before death."

Cross-examined: "In the case of a person who dies of suffocation there is a congestion of the brain; the eyeballs are distended, and there is at all times" (in drunkards dying thus) "a smell of alcohol in the stomach and brain.

Mr. Brady asked the witness, If a person got intoxicated and in a position to prevent respiration, whether the same appearances would not be presented as in the present case?

Witness: "It would depend upon this position. If the head was down and respiration stopped, there might be a paralysis; it is very difficult for persons to suffocate themselves. If paralysis did occur from intoxication, the brain would show it; but there was no appearance of the kind in the present case at all. There was hardly the usual quantity of water in the brain."

Brady: "Could not this woman have got so beastly drunk, that she might have got in a position to suffocate?"

Witness: "Such might have been the case, but it would show itself in the brain."

Brady: "Would you say that she did not go to bed drunk that night?"

Witness: "In the absence of all appearance or symptom to that effect, we were induced to believe that there was nothing to justify a supposition of the kind. If a person died of intoxication, the brain would show it, and in persons habituated to intoxication, there would be a morbid appearance about the stomach and lungs—a bloated countenance, and other marks which would distinguish it. Suffocation and apoplexy present different appearances after death; in the first case the lungs cease their functions for want of air, yet the blood passes to the brain and returns, as there is nothing in the neck to prevent it; but in apoplexy or strangulation, as in the case of a cord round the neck, the blood stops and the brain exhibits the effect. In suffocation, the breath may be stopped in a minute or half a minute, so that a person would cease to struggle, and in ten minutes be dead. There was an indentation of a key on the left breast of the deceased, which might have been made by a heavy arm pressing on it."

Dr. Putnam testified to nearly the same effect. He said: "That none of the viscera exhibited any marks of intemperance; that if death had been so

firmed the accuracy of the opinion given by the medical officer, which was, that after a struggle the woman had been overpowered and

caused, the brain, stomach and countenance would show it ; the brain particularly would be congested. In death by strangulation, there would probably be proof of violence perceptible about the neck, and the tongue would ordinarily protrude ; it generally produces apoplexy. Suffocation may be produced by stopping the respiratory organs, or by inhaling gases. To distinguish which of these causes, one must know the attending circumstances. A person dying of suffocation by inhaling carbonic acid gas would exhibit some change of countenance. I saw nothing in the body externally or internally, that could account for death. Taking everything into consideration, I conclude the death to have happened from suffocation. A pillow laid over the nose and mouth produces such death in two or three minutes, without external marks. I believe the fire to have been communicated to the body after death."

Cross-examined: "My opinions have been formed from reading; never attended but four post-mortem examinations; never of one who died from suffocation from any cause. Congestion of the brain would certainly be found after death from intoxication; so would also inflammation of the stomach. Post-mortem examination was made at 11 o'clock A. M. Stomach appeared as if she had not eaten for six or eight hours; had she gone to bed drunk at one or two o'clock the night before, should expect to find evidence of the fact. I should not expect to find a morbid state of the stomach in the case of a person who drank *moderately*, that is habitually, but not to intoxication; never read of a case of strangulation without marks of external force; whether the tongue protrudes or not, depends upon the peculiar way in which the exterior force is applied. Suffocation may happen accidentally, by getting into a position in which it is impossible to breathe; this is the case often with infants; it is not impossible that this might occur in the case of an adult, in a case as helpless as a child, but the probability is against such an occurrence. In the case of a person in a room where there was smoke, or gas, or corrupt air of any kind, a drunken person's death might be much expedited. In cases of death by noxious gases, the tongue is usually more or less protruded, and there is more or less frothy appearance about the mouth. In ordinary suffocation, not by gases, etc., it is rare that the tongue protrudes; in cases of violent suffocation it is not common; difficult to say, on a post-mortem examination, whether the person died from violent or accidental suffocation."

Physicians, as usual, were called on *behalf* of the prisoner, and some conflicting if not opposing opinions were advanced.

Dr. Archer (Coroner): "Thought that the burns had been inflicted after death; saw the stomach, thought it did not look entirely healthy, as there was a turgid appearance of the vessels, showing that it had been a good deal stimulated. There was no pink margin around the burns; never found an exception of death from burning that there was absence of the pink margin; did not consider it a sign of suffocation that the tongue protruded; thought the eye was burnt after death. In death from carbonic acid the countenance is gen-

forcibly compelled to submit to the desires of her ravisher; who at the same time held his hand over her face to prevent her crying for help. In doing so, however, he had according to his own story, unintentionally suffocated her. The body of the deceased, in this case, presented the signs of asphyxia in a marked degree, the face

erally placid, and it is not common for the tongue to be protruded; the brain and lungs are more or less congested; if there are no external marks, no person can say positively whether the persons died from natural causes or from violence. If a person dies after a debauch, I should expect to find evidence of it in the brain or stomach. It is impossible to say how long after a person has been drinking, its traces would be lost from the system; when the effect is gone, however, the liquor is gone."

Dr. Ramson testified that "he had attended post-mortem examinations in cases of death from suffocation, and lately, where two persons were suffocated by charcoal; their countenances were swollen, and the eyes somewhat protruded; there was a distortion of features (one more than the other, as the patient lay on his face); in cases of suffocation, the brain is generally congested and the blood blacker in the different vessels than in ordinary cases, and the lungs more or less congested; countenance more or less distorted; in such cases should judge more from the blood in the arterial system, than from the brain; there is no particular condition of the heart, except there is black blood."

The testimony of Dr. Middleton Goldsmith was to the same effect.

In summing up the case, Mr. Warner, the counsel for the accused, among other remarks, said, that the medical testimony did not agree, and that it was filled with doubts and uncertainty. "The positiveness," he observed, "with which medical men give their testimony, is to be ascribed to the care they have of their own reputation in their profession, and to the fear they have of seeming ignorant of their profession. These witnesses disagree as to the indications of intemperance presented by the stomach of the deceased. Dr. Archer alone said any. The fact will appear abundantly that she was very intemperate," etc. Mr. Brady quoted from Beck's "Medical Jurisprudence," where it is stated that most physicians are not competent to make post-mortem examinations, and hence argued that those who made the dissection in the present case were probably incompetent! Judge Kent, in his charge, came to the conclusion, after a full recapitulation of the testimony, that, first, *nothing positively certain was shown as to the cause of death*; and, second, *nothing positively excluded the idea that it was occasioned by suffocation—the probability being in favor of the latter*. The judge also instructed the jury that unless they found the death was occasioned by smothering, no matter in what way effected, they could not find the prisoner guilty; although they might come to the conclusion that the deceased perished from burning, or in some other manner, not stated in the indictment, and by the hands of the prisoner. *Verdict—Not guilty.*

being purple and turgid, the eyes injected, the lips and tongue swollen and livid, and the fingers convulsively clenched. The lungs were perfectly black with blood, and so distended that, upon incision, the blood escaped in profusion; the vena cava and right side of the heart were also gorged with dark, but *coagulated* blood. The cerebral veins and sinuses were not remarkably full. If the crime had in this instance been unconnected with rape, it is probable that some marks of violence would have been found, but the weight of the man's body, no doubt, as well as other causes, contributed to the ease with which the suffocation was accomplished.

§ 476. A curious case of suffocation, unintentionally produced, is given in the London Lancet. A lad, eighteen years of age, was, by way of a joke, forced head downwards into a sack containing about a bushel of bran, by two of his fellow-laborers on the farm. According to the testimony of one of the parties, who were at the same time the perpetrators and the only witnesses of the outrage, the mouth of the sack was tied with rope-yarn, round the legs of the lad. This was almost immediately cut, and the boy released from the sack. He was reported to be black in the face and frothing at the mouth, but became sufficiently sensible to drink a small quantity of water. He breathed, however, with great difficulty, remained insensible, and lived only twenty minutes after being extricated from the sack. Upon post-mortem examination, it was found that sixteen hours after death the thorax and abdomen retained a considerable degree of warmth. At the bifurcation of the trachea a large quantity of bran was found; the left bronchus was entirely filled with it, and the right nearly so, and their subdivisions, as far as they could be traced into the substance of the lungs, were full of the same material.¹

§ 477. The following interesting and curious case occurred at Edinburgh in 1855: Janet Stewart, between 60 and 70 years of age, lived in the family of her niece, consisting of three adults and a child besides herself. All were grossly addicted to intemperance. Janet was found dead with a contused and lacerated wound of the scalp, extensive emphysema beneath the skin of the trunk and in the chest, and seven ribs of the left side fractured. The face was pale and slightly swollen, the features composed, the eyelids shut, the lips nearly closed, and the tongue slightly protruding. On examining

¹ Another case in many respects similar to this one is reported by Raymond and Dévergie. Ann. d'Hyg., July, 1852.

the neck, a hard mass was felt at the back part of the throat, which proved to be the cork of a quart bottle, tightly inserted into the upper part of the larynx, the sealed end being uppermost. It was covered with a frothy brown mucus. The epiglottis, larynx, and trachea were considerably injected. The last with the bronchia presented a bright florid appearance, and their whole surface was coated with mucus. By experiments on the dead body it was ascertained that when a cork, such as had here been found, was pushed along the mouth against the cervical vertebræ, the upper end was forced backwards, while the lower end was tilted forwards, and by continuing the pressure made to enter the larynx. It was hence concluded that the attempt to kill indicated by the wound of the scalp, and the fractured ribs, had been successfully completed by suffocation by means of the cork, the frothy mucus around this body and the redness of the mucous membrane proving that death had not immediately followed its introduction. One of the party, who was indicted on the testimony of the rest as the author of these outrages, was tried. The jury returned a verdict of "not proven;" but a few weeks afterwards a body believed to be that of the prisoner was found floating in the Clyde.¹

In infants, murder by suffocation is undoubtedly very common, it being very rapidly effected, and leaving no characteristic traces behind it. Death, thus criminally produced, has often been attributed to convulsions.

§ 478. It is a common habit among nurses, in order to quiet a child, to thrust into its mouth a bag made of rag or wash leather containing sugar or crushed crackers. The infant is thus generally pacified, and, the mouth being filled with the bag, it breathes chiefly through the nostrils. If by any accident these should be obstructed or by a sudden act of inspiration the bag should fall back into the throat, death by suffocation must result, unless prompt assistance be rendered. Should this occur through the carelessness of the nurse, she may remove every trace of the cause of death by taking the bag out of the mouth.²

¹ Edinb. Med. Journ., i. 511.

² Dr. Taylor states that he knows of but one instance in which it gave rise to a criminal charge. (Reg. v. Cox, Warwick Lent Assizes, 1848.)

CHAPTER IX.

STRANGULATION.

- I. Cause, § 479.
- II. Marks, § 480.
- III. Period, § 482.
- IV. Accidental, suicidal, or homicidal, § 483.

§ 479. I. THE *causes of death* in simple strangulation, as in that which is complicated with suspension, are an interruption of the access of air to the lungs, by pressure upon the wind-pipe, and congestion of the brain from the impeded return of the blood to the heart through the jugular veins. The first of these causes is in hanging, the efficient and principal one, but in strangulation, owing to the more complete constriction of the neck, especially where a cord is used, the cause last mentioned certainly greatly accelerates the fatal result. The constriction varies with the band and its adjustment. Sometimes a rope is used, sometimes a handkerchief, a strap, a ribbon, or a strip from the bedding or some article of clothing. Sometimes it is wound several times around the neck, in others twisted like a tourniquet with a spoon, knife-handle, or some similar body. But throttling by the hand is by far the most frequent mode in which the violence is employed, especially in cases of homicidal strangulation. The aspect of a person who has been strangled resembles, therefore, more closely that which was formerly described as characteristic of hanging, viz., a livid and swollen condition of the face, staring eyes with dilated pupils, and protruded tongue. The swollen features, the neck, chest, and eyes are studded with minute ecchymoses which are very characteristic of death by strangulation, when they exist, and they do so whenever the violence applied has been great and the struggle protracted. The other and internal post-mortem appearances are sometimes incorrectly said to be those of death by asphyxia. The lungs and right cavities of the heart are not usually filled with dark fluid blood, the abdominal organs and especially the liver and kidneys are not congested, and the mesenteric veins and the vessels of the head

are not always engorged. M. Tardieu states that an intervesicular emphysema resulting from a rupture of the pulmonary vessels is an almost certain phenomenon. It gives the surface of the organs the appearance of being studded with very white pseudo-membranous spots of variable dimensions. Sub-pleural ecchymosis, which is characteristic of suffocation, is not met with, but in its stead apoplectic nodules in the tissue of the lung measuring from half an inch to an inch and a half in diameter. If death have been caused by suffocation combined with strangulation, punctated ecchymoses under the pulmonary pleura will be found in addition.¹ In young children much reliance is placed by Dr. Casper upon the existence of petechial ecchymoses upon the pulmonary pleura, the heart, and aorta. Actual extravasation of blood upon the brain is, however, of very rare occurrence, if, indeed, it ever appears as a direct result of the strangulation. This fact is of considerable importance in many cases, since in death by apoplexy, the turgor and discoloration of the countenance may occasionally lead to a suspicion of homicidal strangulation, especially if any questionable traces of constriction be discovered upon the neck.

§ 480. II. *Marks of violence upon the neck.*—These are far more evident and important than in hanging, because in homicidal strangulation more force usually is employed than is necessary to accomplish the object of the murderer. If the strangulation have been effected with the hand, the marks of the fingers will be found upon the front of the neck; and sometimes by the form, number, and arrangement of the marks it is easy to determine which hand was used to make the constriction. If by a cord or other ligature, the mark will be nearly horizontal, more or less distinct, and generally ecchymosed. The differences between the slight marks produced by strangulation, as compared with those caused by hanging, depend upon the continuity of action of the compressing cause in the latter case, and also in some cases, as in those of infants and aged persons, upon the small degree of force required to arrest the breathing. Subcutaneous extravasation is not always found. In a case of suicidal strangulation examined by Dr. Casper, in which the ligature consisted of a pack-thread wound thrice around the neck and tied fast over the larynx, the mark was but slightly depressed, and only consisted of a single

¹ Annales d'Hygiène 2ème ser., xi. 133.

line, broad, white, and here and there tinged with blue.¹ The subjacent parts will present traces of injury corresponding to the violence which has been used. The condition of the more deeply seated organs of the neck cannot be at all inferred from the state of the skin which covers them. M. Tardieu has shown that, even when no external bruise exists, effusion of blood may be discovered beneath the skin, among the more deeply seated muscles, and even upon the larynx and trachea, or, if the hand has been used to effect the compression, the effusion may extend to the upper part of the neck and chest. Two cases are referred to below in which the ossified thyroid cartilage was fractured, but these lesions are unusual. The interior surface of the larynx and trachea is usually congested and of uniformly red or violet color, and bathed with frothy and bloody mucus which extends also to the smaller air-tubes. We are not acquainted with any case in which laceration of the carotid artery has been found after death by homicidal strangulation. But as this lesion can be produced by imitating strangulation on the dead body,² it is also probably one of the occasional effects of the homicidal act.

§ 481. The distinction of the signs of apoplexy from those of strangulation consists essentially in this, that in the former none of the derangements which have been described of the parts beneath the skin can be detected. The proofs of strangulation are also different from those of hanging. This distinction is important chiefly when a dead body is found suspended; for it must be remembered that this position generally denotes suicide, while strangulation ordinarily indicates death by homicidal violence. The cases most apt to be confounded are those in which strangulation has been effected by a cord or similar constricting band. The obliquity of the mark has been generally insisted upon as proving death by suspension. But, when the whole weight of the body has not exercised its traction, this sign may fail, and, on the other hand, the complete circular mark is often wanting, even where strangling has been the cause of death. In the latter case, also, the constricting band or cord leaves a comparatively slight impression, while in the former a deep furrow is produced. But in strangulation the injuries to the soft parts beneath the skin are very marked, while in hanging they are comparatively slight as a general rule. The discharge of feces, urine and semen, which has

¹ Gericht. Leich., 2tes Hund. 1854, Fall. 59.

² Simon, Virchow's Archiv., xi. 297.

been regarded as peculiarly the effect of death by hanging, may result from almost any form of violent death, and occurs in many forms of natural death when the bodily vigor is not greatly impaired.

The signs of death by strangulation differ from those of death by suffocation, in this, that the latter are observed about the nostrils and the mouth, and not upon the neck; but in many cases the evidence of both forms of violence will be found combined.¹

§ 482. III. *Was the strangulation effected before or after death?*—This question is one of inferior practical importance. The object of any one, in applying a ligature around the neck after death, would be, of course, to convey the idea that the person had committed suicide. As, however, this mode of self-destruction is extremely uncommon and usually attended with circumstances which betray it, the presumption, in the case of a person found strangled, is that the deed was committed by another. Hence the probability of suicide, which obtains in hanging, from the frequency with which this mode of self-destruction is chosen, is in cases of strangulation not to be entertained, unless direct or circumstantial evidence supports it. Moreover, the cases in which it may be possible to admit the suspicion of suicide, are not those in which any doubt can be entertained, because, if the cord have been placed upon the neck merely for the purpose of concealing the fact of murder, the means by which life really has been taken will not fail to be revealed. Thus, marks of fatal violence will be found upon some part of the body, or traces of poison in the stomach. Yet, if any doubt should still remain of the truth of these considerations, it only remains that the signs of death by strangulation cannot be closely imitated after death. We have seen above, that, when death has resulted from this cause, not only will the marks of the fingers or of the constricting band be found of various depths and of different degrees of discoloration, but also that the aspect of the countenance taken in connection therewith as well as the internal signs of death by asphyxia will indicate the mode of death. Although the experiments made upon dead bodies by Dr. Casper show that if the attempt to imitate the mark of strangulation were made six hours after death, it would be unsuccessful, yet, as the attempt would most probably be made *immediately* after death, and even before life was quite extinct, it is evident that any satisfactory conclusion can be

¹ Tardieu, loc. cit.

drawn only from an examination of the mark, *in connection* with the other signs of asphyxia. These cannot be produced after death, and we may, therefore, be certain where we find a mark indicating strangulation, and, at the same time, the face purple and congested, the tongue protruded, the eyes prominent, and the other indications of death by apnoea, that the individual has been strangled during life. This will lead us to the question—

§ 483. IV. *Was the strangulation accidental, homicidal or suicidal?*¹—A few cases of accidental strangulation are upon record. Dr. Taylor relates that a girl was accidentally strangled in the following way: “She was employed in carrying fish in a basket at her back, supported by a leathern strap passing round the forepart of her neck, above her shoulders in front. She was found dead, sitting on a stone wall; the basket had slipped off, probably, while she was resting, and had thus raised the strap, which firmly compressed the trachea. A similar case is reported by Watson (*Homicide*).” Should the body not have been removed from the position it occupied at the time of death, and if the evidence of veracious and disinterested witnesses relative to this fact can be obtained, there will seldom be any hesitation in admitting the possibility of the accident.

The allegation may, however, be made for the purpose of concealing crime. A person who, in a state of helplessness from intoxication or other cause, has fallen into a position in which his throat becomes compressed by a tight cravat, may possibly thus die accidentally of strangulation. But if marks of constriction be found upon the neck, it is much more probable that they were caused by criminal violence than that they were due to accident. As in courts of law undue stress, medically speaking, may be laid upon the possibility of strangulation marks being accidentally produced, the medical witness will do well to compare closely the impressions upon the neck with the ligature supposed to have produced it, as in many cases an important and conclusive discrepancy will be found.

§ 484. *Suicidal strangulation*.—Were there not a sufficient number of well-attested cases of suicide by strangulation upon record, it might fairly be doubted whether it were possible for persons voluntarily to destroy themselves in this manner. But the annals of legal medicine abound with examples of the most determined tenacity of pur-

¹ On the question of conflict between homicide and suicide, see *supra*, §§ 272. 297, *infra*, §§ 784, 914, *et seq.*

pose, and the most singular choice of modes of death upon the part of suicides. Without dwelling upon this fact, it may be stated that in this mode of death an infirmity of purpose is less likely than in many others to frustrate the intentions of the suicide. Unconsciousness steals in such an insidious but rapid manner over the senses, that the will and power to escape are speedily lost.

The ligature used by those who thus destroy themselves is generally chosen from those articles of dress which lie nearest at hand, as cravats, garters and the like. The knot will most probably be found in front, or a little to the side, and the mark left will convey the idea of less violence than will that made in homicidal cases, where no other injury has been inflicted. The question often arises, says Casper, whether the mark upon the neck has been caused by a certain instrument which is supposed to have been used. This question it is not always easy to answer. It is true that hard, rough substances, cords, etc., usually produce excoriations, which is seldom the case with softer ones. It is also true, as a general rule, that the breadth or diameter of the mark upon the neck corresponds to that of the instrument used. But many exceptions occur to these rules. The instrument may be of a soft texture, and yet have rough edges; it may be twisted, and the sides press against the neck, etc. Some light may often be thrown upon cases of murder or suicide by hanging, by observing what kind of a knot is tied in the ligature, as it is known that different classes of tradesmen are in the habit of tying knots in a way particular to themselves.

§ 485. A remarkable instance, showing the rapidity and ease with which self-strangulation may be effected, is the following. A gentleman was placed in a private insane asylum. His relatives desired the superintending physician to use every endeavor to prevent him from committing suicide, as he had repeatedly attempted it. In consequence of this request, two attendants were placed near him. Fatigued with the long journey he had made, the patient desired permission to retire to bed; the two attendants remained at his bedside. A short time after, at his pressing solicitation, these men were directed to leave his bedside, but still remained in the room, keeping a close watch upon him. In two hours afterwards the physician paid a visit to his patient. The attendants remarked that he had been and was still sleeping quietly, and had not stirred. Upon approaching the bed, however, and proposing a question to the gentleman, no answer

was received, and, to their horror and surprise, he was found to be dead. He had torn a strip from the bottom of his shirt, rolled it into a cord, and simply tied it around his neck.¹

Mr. Pollock, in his evidence in the case of Drory, gave the following case : “ Pizzala, an Italian, about fifty years of age, employed as a porter, was found dead in the forenoon of the 3d of January 1851, in an attic of the house of his employer. He had been missing from his employment thirty hours. When found, he was lying on his back, rather inclining to the left side, with a piece of ordinary sash-line coiled *four times* around his neck, two of the coils so tight and imbedded therein that there was some difficulty of undoing it. The right hand held one end of the line, and the left hand the other, with a turn of line around each, to hold it the more securely. The right arm was extended, the left flexed. I made a post-mortem examination of the body on the fourth day after it was found. Externally, the face was swollen and purple, the vessels of the conjunctivæ were injected, the tongue protruded towards the left side, bloody froth issued from the mouth, and the lower jaw was slightly twisted to the left side. The skin of the neck was abraded in a nearly continuous line around it, about five-eighths of an inch in width, and presenting the appearance of being produced by two coils of the line. There was considerable ecchymosis above and below the line of abrasion. Each hand retained the impression of the line being coiled around it. *Internally*, the vessels of the brain and its membranes were greatly congested. The evidence before the coroner left no doubt of this having been a suicidal act. This case proves that a person may strangle himself, and that he may accomplish strangulation by pulling the two ends of a cord coiled several times round the neck ; and that some degree of local violence to the neck may thus be produced by the ligature used.”²

§ 486. Prof. Tardieu gives in the Ann. d’Hyg. (xxi. p. 415) a long account of the case of M. Armaud, of Montpelier, a trial which excited the greatest interest in France and in England. On July 7, 1863, Maurice Roux, a servant of M. Armaud, was found lying in a cellar in a state of asphyxia, with a cord round his neck and his feet and hands tied. He rapidly recovered, and in less than three

¹ Ann. Mèd.-Psycholog., tome iv. p. 113.

² Taylor, Brit. and For. Med.-Chir. Rev., April, 1852.

hours was quite well, except that he was mute, being unable not only to speak, but even to groan or produce the slightest sound.

The next morning he gave by signs a description of what had occurred. According to this statement, his master, M. Armaud, came into the cellar, gave him a blow behind the head and afterwards strangled him and tied his hands and feet. This took place about 8.30 a. m., that is to say, eleven hours before he was found by the servant who always went down at that time to fetch some wine.

M. Tardieu came to the conclusion that this was false, and that Roux had fabricated the whole charge.

In forming an opinion as to the truth of the man's statement, it is, of course, of primary importance to ascertain whether the ligatures were so placed that they could not have been applied except by another person. Now, about this there can be no doubt. The cord about the neck encircled that part several times; according to one of the witnesses as many as ten times, while others gave four or six as the number of the turns. It was not fastened in any way. Its position was marked by several suggillations, which were quite recent and superficial and presented no ecchymoses. It is therefore clear that no force was used in applying it; and the numerous turns and the absence of any knot are much more characteristic of suicide than of homicide. The hands were fastened behind the back. The cord by which this was effected was wound ten times around the right wrist, and tied with a knot at each turn. The other hand was encircled with but three turns of the cord, with only one knot. The portion of the cord between the two hands was the length of a finger. It is quite possible, therefore, that Roux may have himself tied up his hands. The cord around the right wrist was tight, and this is of importance, for the hand was not swollen, and this could hardly have been the case if the ligature had been applied for eleven hours.

The state in which Roux was found was extremely critical. His arms and forearms were cold, though his face and head were of the natural temperature. His respiration was stertorous, his pulse scarcely to be felt. His conjunctiva almost insensible. M. Surdun, who saw him a little later, says, that his respiration was nearly normal, his pulse feeble, regular, and very slow. His whole body cold, the chest and abdomen being the only parts at all warm. These descriptions are not quite congruous, but they seem to show that the pulse and respiration improved rapidly under the means which were used to

restore animation. This renders it probable that the asphyxia was not of long duration, and certainly that it had not lasted, as said by Roux, for eleven hours. It is true that the gradual swelling of the tissues beneath the cord might tighten it, and so render dangerous a ligature which at first produced no ill effects; but it is contrary to all experience that asphyxia should last for so long a time without a fatal termination.

It was stated by Roux that his master stood before him, and gave him a blow with a stick or billet of wood on the neck, which rendered him insensible. M. Surdun examined the neck at the time without finding any injury, but the next morning he observed a small excoriation near the insertion of the right trapezius muscle. With reference to this, three questions were put to the experts, which well illustrate the disadvantages of putting theoretical propositions without reference to the actual case. These questions were: 1. Can a blow on the neck occasion symptoms of concussion ("commotion"), or of syncope? 2. Must a blow on that part be violent, or very violent, to produce such symptoms? 3. Must such an injury always leave well-marked traces of contusion, such as ecchymoses? The answers to these questions were: 1. Yes. 2. No. 3. No. Yet, as M. Tardieu observes, it is most unlikely that a blow with a piece of wood, on a part so well protected by a large mass of muscles, should produce severe effects without causing more than a slight excoriation.

It is much more probable that the injury was produced, as a similar one on the chest was no doubt produced, by the fragments of coal which covered the floor of the cellar.

Equally unsatisfactory is the statement of Roux as to what followed the blow on the head. He first described in signs that M. Armaud tied a cord around his neck, fastened his hands behind his back, and afterwards bound his legs together with a handkerchief. The next morning he stated that the blow rendered him insensible. He even gave a third account, according to which he was stupefied and unable to move or cry out; but it seemed to him that M. Armaud practised some extraordinary action upon him, and that afterwards he became strangled and bound. He also said that he heard a noise in the adjacent cellars without being able to call out. This state of clairvoyance is certainly extremely improbable as the effect of a blow, and no less remarkable is the state of mutism in which he remained for thirty-six hours after his recovery. He could not speak a word, nor even cry

out, nor groan. Yet he could make gestures, describing the way in which he was attacked. With the aid of an alphabet he answered clearly a long and minute interrogatory. When confronted with his master the play of his countenance indicated his feelings towards him, as well as the perfect state of his consciousness. The next morning his speech suddenly returned. There can hardly be any doubt that the mutism, like the rest of the case, was simulated.

In addition to the paper of M. Tardieu, the opinions of five other eminent physicians are given, expressing full agreement with his conclusions.

M. Armaud was acquitted in the criminal court, but was afterwards heavily fined when the case was brought before a civil tribunal. This decision has since been reversed by a superior court.¹

§ 487. We should not expect to find the mark of fingers upon the neck in suicidal strangulation. It has, indeed, been supposed that a person might endeavor to strangle himself with his hand, and, failing in it, afterwards resort to other more effectual means. We have not, however, met with any case which would bear out this view, and must consider such an attempt as highly improbable. In case an intoxicated person should fall into such a position that his cravat or the collar of his shirt impedes his respiration, he may instinctively carry his hand to his throat to remove the constriction, but it is more reasonable to suppose that his effort would be to draw *aside* and *away* from the larynx the collar which was pressing upon it, or unfasten it in any way, than that he should imprint his fingers so deeply in the skin as to leave a visible mark.

§ 488. An interesting case of suicidal strangulation is related by Dr. Simeons,² in which a sabre was used to tighten the ligature. The latter consisted of a cotton handkerchief tied in a hard knot on the side of the neck. The sabre had been inserted into a loop in front and evidently twisted several times upon its axis, so that the neck became very firmly constricted. The constriction indeed was so great that the sabre could not be extricated from the loop, until it had been drawn out of the sheath, which was compressible. When the handkerchief was removed, it was found that a broad, deep, and ecchymosed impression had been left, which was still more marked and attended with excoriation in the point corresponding to the knot.

¹ Year-book of Medicine and Surgery, 1864.

² Henke's Zeitschrift, 1843, H. i. p. 335.

The borders of the mark had a parchment-like appearance. The individual was a corporal, remarkably robust in constitution, and destroyed himself in consequence of having been put under arrest for neglect of duty. Collateral evidence rendered the fact of suicide unquestionable. A man about sixty years of age was found in a wood, a napkin around his neck, tightened by a walking-stick twisted through a loop in it. When found, the corpse *was lying on its back, the lower limbs extended, and the arms straight and close by the sides*, the whole as if the body had been laid out artificially after death. There was, however, sufficient evidence that the man had strangled himself.¹

Mr. Thorpe, in his evidence in the case of Drory, already referred to, mentioned the case of a man who effected self-destruction in the following manner: "He passed a noose of cord over his head and then inserted a stick, about fourteen inches long, between the cord and his neck. Having done so, he, with the assistance of the stick, twisted the end sufficiently tight to cause almost immediate suffocation. Still, it appeared that there was time for him to insert the lower end of the stick in the inner side of the waistcoat, and the upper end was accurately adapted to the internal jugular vein and carotid artery." Other cases in which a stick was employed are on record. In this way General Pichegru died in prison, and was supposed to have been strangled by the orders of Napoleon. But the case was most probably one of suicide. The question of suicide will, however, seldom rest upon an estimate of the evidence from such circumstances as these alone, but rather upon the absence of marks of violence and other signs of homicidal interference.

§ 489. *Homicidal strangulation*.—The characteristics of homicidal strangulation will be found in the great amount of violence, the marks of which will be seen upon the neck or elsewhere. The marks upon the neck will be either simply broader, deeper, and more ecchymosed than those which are met with in the rare cases of suicide, or will be attended with other local injury which could result only from the application of a rude and sudden force. A case is related by Casper² in which there was not only a brownish-yellow groove with reddened edges upon the neck, but also three ecchymosed spots, two at the angle of the jaw on the left side, and one on the right side of

¹ Brit. and For. Med.-Chir. Rev., xix. 301.

² Gericht. Leichenöffnungen, 1stes Hundert. 1853, Fall. 49.

the jaw. These could only have resulted from outward compression, and they were supposed to indicate a grasp of the throat by the hand, the thumb leaving its impression on the one side and two of the fingers on the other. Without doubt the murdered woman had been first seized by the throat, and then, after having been rendered senseless, was strangled by the ligature, the mark of which we have described. In a case communicated to Dr. Taylor by Dr. Campbell, of Lisburn, there was a mark on either side of the larynx under which, also, in the substance of the muscles, coagulated blood was found. The thyroid cartilage, which was partly ossified, was fractured through the ossified portion. The case was clearly one of homicidal strangulation with the hand.

§ 490. An equally clear case is reported by Dr. Wilson.¹ The body of a woman, two days after death, presented the following appearances: The right cheek and the lower part of the neck over the collar bones, were deeply livid; the eyes were suffused and red; there was a circular contusion on the forehead; a hard and parchment-like yellowish-brown mark, about an inch and a half in length by half an inch in breadth, on the left side of the chin, running along the lower margin of the jaw; and another similar mark of nearly equal dimensions passed transversely across the throat immediately over the larynx. There were traces of blood which had flowed from the right nostril. There was an extravasation of blood among the muscles of the neck, and the thyroid gland was largely infiltrated. The trachea contained frothy mucus; blood was effused beneath the lining membrane of the larynx; there was a fracture of the right wing of the os hyoides, and the cricoid cartilage was broken in two places. Extravasated blood was found below the left mamma and greater pectoral muscle. The brain was congested. No other lesions existed. The probable interpretation of these facts was that the woman had been felled by a blow upon the forehead, that the murderer had then knelt at her right side, with his face towards hers, and his right knee across her chest, causing the effusion under the pectoralis major muscle; and then, pressing her head to the floor by his left hand on the left side of the chin, producing here another mark, he had grasped her throat with his right hand, and strangled her with violent pressure, either with the hand alone or aided by a ligature. The husband of the woman, who was indicted for her mur-

¹ Edinb. Med. Journ., i. 290.

der, admitted that he was alone with her at the time of her death, which he explained by her falling while intoxicated. The judge objected to the medical evidence that it was "merely inferential," and the prisoner was acquitted! Upon which, Dr. Wilson quotes from Archbishop Whateley: "He who infers proves, and he who proves infers."

§ 491. MM. Briand and Chaudé quote the case of a woman who was found dead in her bed. Some discoloration of the neck suggested the suspicion that she had hung herself, and that her family, to avoid scandal, had laid her body in bed. But a more attentive examination showed that the bruises were confined to one side of the neck, that the two horns of the hyoid bone were unusually movable, and that the thyroid cartilage was flattened; the cricoid cartilage was also broken across its middle. The brother-in-law of the woman afterwards confessed that he had attempted to violate her, and, in order to stifle her cries, had grasped her by the neck until she ceased to live. He was found guilty of murder.¹

§ 492. Mr. O. Pemberton² relates the following case. A maiden lady, aged 60, who resided alone, was found one evening about half past six o'clock, lying dead at the top of a flight of stone steps leading to the cellar. The body was still warm. The post-mortem examination was made eighty-eight hours after death. The body was fresh; marked lividity of the middle third of the nose; nasal cartilages torn from the bones, and nose pushed to the right side. Mouth closed placidly; no marks of violence about gums or tongue. Anterior aspect of neck was livid and in places greenish from decomposition. Cricoid cartilage fractured on left side; fracture running through the cartilage in an angular direction, the angle jutting out and pointing to middle line. This and the thyroid cartilage were ossified in a marked degree—the thyroid most. Blood was effused about the crico-thyroid muscle and adjacent cellular tissue. Inside the larynx the mucous membrane was uninjured, but the submucous tissue was infiltrated for a space corresponding to the fracture. Lungs and heart in the condition usually found after death from suffocation. Vessels of brain congested.

Four persons were arrested, one of whom confessed that they had entered the house for the purpose of robbery. A fifth man, who had

¹ *Manuel de Méd. Lég., 6ème éd.* p. 393

² *Lancet*, May 22, 1869, p. 707.

not been arrested, had been given the old lady in charge, and it was supposed that, in attempting to stifle her cries, he had unintentionally "squeezed her too tight."

§ 493. An interesting case is related by Dr. Gräff,¹ in which a woman was murdered by strangulation, and the assassin had taken great pains to convey the impression that the act was one of suicide by hanging. The body was found lying close to a door, with a string passed twice around the neck, and fastened in a slip-knot behind. The impression made upon the neck was deep, and, for the most part, of a dark-brown color, particularly on the sides. It was perfectly horizontal. The free end of the string looked as if it had been broken. There was a peg in the door over the body, on which a towel was hanging, not in the least disarranged; the peg itself was slight and incapable of bearing the weight of the woman's body. Furthermore, there was no portion of the string attached to it. An overturned chair lay near the body; and on a writing-table in the room, a paper was found declaring the intention of suicide, and purporting to have been written and signed by the deceased. It was clearly proved, however, that this document was not in her handwriting, nor correctly signed, and the fact of her having been murdered was abundantly shown by these attempts at deception, other marks of violence upon the body, and the subsequent discovery that robbery had been committed.

§ 494. One of the most interesting cases of homicidal strangulation is that given by Dr. Taylor, in Guy's Hospital Reports for 1851. The prisoner was found guilty, and before his execution made a confession, in which he stated that he met the deceased by appointment, that they talked and walked about, after which, at her suggestion, they sat down on a bank. She had come to urge him to marry her. He passed a rope, which he had previously secreted, gently around her neck as they were sitting, and had got the end of it in a loop before she perceived it. She jumped up at once, and put up her hands to save her throat, but he pulled hard and she fell without a struggle. We have thought this case of sufficient interest to present a tolerably full abstract of it in the note, since it offers many incidental suggestions worthy of consideration²

¹ Henke's Zeitschrift, 1846, p. 145.

² At the Chelmsford Lent Assizes, for 1851, Thomas Drory was tried for the murder, by strangulation, of a female named Jael Denny. He was the son of a

§ 495. M. Tardieu reminds us that strangulation may be simulated by persons who have an interest in pretending to be the victims of violence.

farmer of great respectability, and resided within a short distance of the cottage where the deceased lived. Both were about twenty years of age, and the girl, who was pregnant by the prisoner, had reached the ninth month of her pregnancy. On the afternoon of Saturday, October, 12th, 1850, the prisoner and deceased were seen conversing together for about twenty minutes, in the neighborhood of the prisoner's cottage. This was about half-past five p. m. The evidence respecting the deceased showed, that about six o'clock on this day, she had tea with her parents as usual, appearing to be in good health and in high spirits. She told her mother that she had made an appointment with the prisoner to meet him at a stile very near the cottage, *at half-past six o'clock*, and the prisoner, it was supposed, had led her to expect that at this interview he would make some arrangement regarding his marriage with her. At or about this time, the deceased left her tea half-finished, dressed herself hastily in some of her mother's clothing, left the house, and was not again seen alive. She was found next morning, at or about *eight o'clock*, lying dead in a field, at a short distance from the stile, at which she said she had made an appointment to meet the prisoner on the previous evening.

"When her body was found, the head was cold, and the arms and legs cold and stiff; but the body (the abdomen) was perceptibly warm to the hand. It will be remarked, that from the time the deceased was last seen alive, thirteen and a half hours had elapsed.

"The attitude of the body when found is thus described by the different witnesses: The deceased was lying on her face, a little inclined on one side, owing probably to the prominence of the abdomen. Her lower clothes were arranged in a straight and orderly manner, and her fur-tippet was lying on the ground, two or three yards from the body. Her bonnet was on her head, much crushed and broken. It was flattened in front as if from pressure from behind, while the deceased was on her face. Her face was flat on the ground, and her nose pressed down tightly. The nose is described as being quite flattened, and turned a little to the left side by pressure; it was impossible, in the opinion of one witness, that the mere weight of the head could have produced either this degree of pressure, or the indentation observed in the ground. The features were so altered, that, although this witness had known the deceased for four or five years, he could not recognise her. When the body was turned over, blood escaped or bubbled from the mouth, nose, and eyes; and the face was observed to be black and much swollen. There was half a teacupful of blood on the spot where the face lay—under the mouth, and more blood in another spot about a foot from the head; the hair was matted together with blood and dirt. The right arm was lying bent at a right angle underneath the body, and pressed down by its weight; the left was raised, with the hand directed towards the left shoulder, but partly covered by the body. There was a cord on the neck, which was twisted round it three times. One of the witnesses took the third turn from off the neck, and observed that this turn was a little loose; but on

When this mode of violence has really been attempted without a fatal result, the signs of it are evident in the discolouration and swelling of

putting his finger to the throat, he found a knot of cord lying in front of the neck. The remainder of the cord was very tight, a portion being actually imbedded in the neck, and the cord was drawn so tightly that the skin of the neck had swollen up between the coils. From other evidence it appeared that the knot which formed the loop of the rope was pressing on the front part of the neck, while the bight of the noose was at the back part, a little behind left ear. There were *three coils and a half* of rope round the neck, and, with the exception of the last half coil, all were tight, the two innermost coils being so tight as to indent and cut the skin. The end of the cord went over the back of the left shoulder, and about an inch of its extremity was lying loosely (without being grasped) between the thumb and finger of the *left* hand of the deceased, which was raised towards it. One witness described this hand as being stretched out a little, so that the end of the cord could be seen lying in the hand, before the body was moved or turned over. The deceased was *right-handed*; there was no mark of grasping, laceration, or indentation on either hand; and from the position of the bight of the noose and the direction of the coils, the cord could have been tightened only by pulling to the *left* of the deceased. The cord was stout, and of the thickness of a window-sash line. At the part where the noose had been tightened, the pressure had been so great that the cord was condensed to about half its thickness, and some of the fibres had been cut through by the force used. There was no blood upon it, except just at the end, where there was a small spot. The second coil had, at the back part, tightly locked in a portion of the apron of the bonnet and handkerchief of the deceased.

"A woman who undressed the deceased, six hours after the body was found, stated that she examined her face and found the mouth bubbling with blood; her tongue protruded out of her mouth, and was clenched very tightly with her teeth. Blood oozed from her eyes, mouth, and ears. Her body, from her head to the shoulders, was very black (livid). There were two marks where the cord went round the neck, quite lacerated through the skin. Upon the back of her left wrist were marks apparently of a bite from both rows of teeth—the impressions were quite distinct before they were washed, and blood was oozing from them. On the right elbow a piece of skin had been taken off, about the size of a shilling, and the patch was very black. The elbow had a bruised appearance.

"A *post-mortem* examination of the body of the deceased was made by Mr. Williams, surgeon, of Brentwood, on the second day after it was found. The eyes were much distended and suffused with blood, and the pupils were dilated. There was a general lividity and swelling of the face; and the tongue, which protruded from the mouth, had been bitten by the teeth. There was a superficial laceration of the skin, covering the lower part of the throat on both sides; and there were two deep marks, as if from two cords, or from two impressions of one cord tied tightly round the neck. The two impressions were both situated over the trachea, and the skin had swollen up between them. The trachea had been flattened by strong pressure, but had regained its shape; it had a bruised

the neck, along with a marked difficulty in swallowing, and often a very great alteration of the voice. An intelligent and respectable

appearance in the parts corresponding to the two marks on the neck, and its structure there was softer than natural. There was extreme ecchymosis on the upper part of the chest, such as might have been produced by a heavy blow, or by the pressure of a person kneeling upon it. There was a contraction of the fingers, which were drawn into the palms of the hands. There was an abrasion of skin at the back of the right elbow. There were marks apparently of teeth, on the back of the right wrist, and there were also scratches on the back of the left arm and hand. On opening the head, there was great congestion of the whole of the brain. The heart was healthy, but much distended on the right side with blood in a coagulated state. The lungs were congested to an unnatural degree; the right pleura was adherent—a result of previous inflammation. The stomach contained ordinary food, and the coats were in a healthy condition. The intestines were healthy. On opening the uterus it was found to contain a male foetus in the ninth month; and this was probably alive at the time of the deceased's death."

For the defence, two surgeons, Mr. Thorpe and Mr. Pollock, deposed—the first that he thought there was a *doubt* as to whether the deceased committed suicide or not; the second, that he would feel *considerable difficulty* in forming an opinion as to the cause of death, whether suicide or homicide. Both of these opinions were founded upon cases which they had met with, but which, as they had no similarity with the present case, may here be omitted. Dr. Taylor, however, gave a decided opinion that the case was one of homicide, and his observations, which are remarkable for their minuteness and logical accuracy, we here subjoin.

" 1. The deceased was *right-handed*, and, on the hypothesis of suicide, she must have made the tension with her *left* arm and hand. From the position of the loop or noose, any traction to the right would not have tightened, but have loosened the cord.

" 2. That, supposing her to have exerted such a traction at all, she must have been in the erect or sitting posture. The force used, indicated by the great local violence to the neck, could not have been exerted by a person attempting to tighten a cord by drawing it to the left while in a recumbent posture, whether prone or supine. This hypothesis would, besides, leave wholly unexplained the flattening of the nose (obviously from direct pressure, not from a fall), and the fact that the deceased had bled in *two* places, one spot being a foot from the other.

" 3. The cord must have been pulled with excessive violence in a horizontal direction by *one end only*, as the mark was *circular* around the neck. The other end of the cord formed a noose or loop, and was tightly fixed at the back of the neck. Thus, then, all the force of traction must have been exerted to the left, in which direction the right hand of a right-handed person could not act horizontally, so as to produce the amount of violence found on the soft parts of the neck.

" 4. That the fact of there being three coils and a half of rope round the neck,

young woman, who desired to excite an interest in her behalf, gave out that she was the victim of political conspirators, whose secrets she

formed an obstacle to the tightening of the cord, by pulling one end to the left so as to imbed the two inner coils in the skin, and to leave the outer or third coil loose. On the supposition that the deceased produced the constriction by her own act, it follows that the three coils must have been round the neck at one time, and the two inner coils sufficiently loose to allow of respiration before traction was commenced.

"5. The double indentation found on the trachea could not have been produced by the two inner coils (on the supposition of suicide), except by the great tightening of the outer coil.

"6. As insensibility and loss of power must have immediately followed the complete compression and obliteration of the trachea by the two inner coils, the outer coil ought not to have been found loose or unconnected with the object by which the force of the contraction had been produced.

"To suppose that the deceased could have produced the intense constriction by the first coil, and afterwards retained sufficient power to pass a *second* coil from right to left around her neck, indenting the skin and flattening the trachea as much by the second as by the first coil, involves, in my judgment, a physiological impossibility. There was, therefore, on the suicidal hypothesis, no explanation to resort to—but that all three had been placed at once round the neck *loosely*—that one end only of the cord had then been so pulled to the *left* as to produce the great amount of violence found, and to tighten equally the two inner coils; while the outer coil and extremity of the cord, by which this immense force must have been applied to the two inner coils, was found lying loosely, without any attachment either to the hand of the deceased or to any other fixed point.

"7. To have indented the neck, compressed and bruised the trachea in two distinct places, to have caused effusion of blood to the amount of a cupful from mouth, nose and ears—this effusion being found in two distinct places, a foot distant from each other—would have required a very considerable tension of the outer coil, and, at the same time, a *continued* tension, lasting sufficiently long for the head to move a foot after a cupful of blood had been lost as a mechanical result of the first constriction.

"8. Admitting such conditions of the body and cord to be compatible with suicide, the act could only be conceived to be possible in this case, by the fact of the end of the cord being found tightly wound round the left hand of the deceased.

"9. On the suicidal hypothesis, it would undoubtedly have required a very firm grasp of a rope to produce such effects as were here observed; and from the rapid production of unconsciousness by the compression of the trachea and the arrest of respiration, it would have been impossible on the part of the deceased, to relax the grasp. Hence the cord should have been found, either firmly held in the hand in the rigidity of death, or wound round it in a state of tension. Unless we adopt this view, we must suppose that after having used an enormous

had discovered. One evening she was found at the door of her chamber in a state of great excitement and apparently alarm. She did not speak, but at first made signs, and after a time wrote that she had been attacked by a man who attempted to strangle her with his hand, and at the same time stabbed her twice in the breast. These blows had only injured her clothing, and her corset was not pierced at the same place as her dress, and the alleged throttling had not altered the character of the voice but suppressed it entirely¹. No external sign of violence could be found upon her, and ultimately she confessed her trick.

§ 496. In conclusion, the fact should not be overlooked that, even amount of violence by a rope in the left hand, the dead body had the power of relaxing the grasp, of loosening the outer coil of cord, and so moving the hand that the end of the cord should be found lying between the finger and thumb, and barely touching the palm. Such a condition is not only physiologically, but in this case, as it will be presently shown from the length of the cord, physically impossible.²

10. (This refers to the absence of any marks of the cord upon the hands, such as would have been there, if forcible traction had been made by them.)

“ 11. The length of the cord renders it impossible to suppose that such a force could have been exerted by the deceased herself. The length of the cord was fifty-nine and a half inches. The three coils and a half must have consumed at least fifty-two and a half inches, leaving only seven inches for the traction. ‘ This,’ says Dr. Taylor, ‘ was barely enough to reach the finger and thumb of the raised left hand, and not enough to allow of such a firm grasp by the hand as would be necessary to the production of so much violence to the soft parts of the neck. I find, by measurement, that the circumference of a small female hand in the adult is rather more than *seven inches*. This measurement includes only the palm of the hand without the thumb, and embraces the part of the hand around which a coil would be placed, when the object of a person was to produce firm traction. Hence, then, the hypothesis of suicide involves one of these physical conditions. Without a firm hold of the cord, which could not have been had with less than one coil round the hand, it is impossible to conceive that such violence to the neck could have been produced by the act of the deceased ; and if one coil had thus been spontaneously wound round the hand, it would have consumed the whole length of the cord up to the last half coil, and left no portion whatever to give a purchase for pulling with so much violence. Either condition is a physical impossibility ; and no theory will suit the facts, or explain them, excepting that which admits that the act was not the result of suicide, but of manual violence applied by another person.’

“ The evidence by which the crime was fixed upon the prisoner Drory, it is not necessary here to relate. The chain of evidence was complete and irresistible, and, as has been stated in the text, the criminal made a confession previous to his execution.”

where the body has lain a considerable time in the ground, and is advanced in putrefaction, the marks of strangulation, if this have been forcible, will occasionally be recognised. An instructive case is upon record, in which, after a lapse of thirty-eight days from the interment, a corpse was, by order of the authorities, disinterred. The body was already greatly decomposed, but the evidence of strangulation was obtained chiefly from the fact of the striking contrast of the integuments of the neck with those of the rest of the body. There was observed a white and shrivelled space over the larynx, half an inch in breadth, and extending back on each side of the sterno-cleido-mastoid muscles, from which, also, to the nape of the neck over the second vertebra, there ran a groove of a blackish-brown color, and parchment-like appearance. It was very difficult to cut through this condensed skin, which, upon incision, gave the sensation of old dry leather, and its section was yellowish-white, and perfectly dry. Another remarkable case occurred in Paris, where, after the body of a female had lain several years in the ground, and was reduced to an almost perfect skeleton, an examination made by M. Boys de Loury, Orfila, and other medical jurists, proved that the woman had perished by strangulation. The third, fourth, fifth and sixth cervical vertebræ, as well as the right clavicle, were held together by a blackish mass, in the composition of which there could not be recognised any tissue. This mass was surrounded at its lower point by several twists of a cord, two lines in diameter; the cord was in a very decayed condition, and no knot could be found upon it; its direction was exactly horizontal.

CHAPTER X.

HANGING.

- I. General symptoms, § 497.
- II. Marks of the cord, § 500.
- III. Rupture of artery, § 504.
- IV. Tumefaction of genital organs, § 505.
- V. Condition of eyes, § 506.
- VI. Suicidal or homicidal? § 507.
 - 1st. Position and condition of body, § 508.
 - 2d. Marks of violence, § 514

§ 497. I. *General symptoms.*—In hanging, death is caused mainly by the pressure of the cord upon the windpipe, by which the access of air to the lungs is cut off. The individual is therefore strangled; he dies more rapidly, but in the same manner, physiologically speaking, as do those who are suffocated by drowning, or who are placed in any irrespirable medium. If, however, the air be not completely cut off from the lungs, as in those instances in which the cord presses upon a portion of the larynx which is ossified, as in some public executions, it tears the os hyoides loose from its connections with the larynx, or the noose slips from its proper position and catches against the lower jaw, death does not ensue with the same rapidity. In these cases other secondary causes aid in the extinction of life, the veins of the neck being compressed or the cervical vertebrae injured.

§ 498. The signs of hanging are, therefore, in general terms, the same as those of asphyxia from other causes, but will vary in intensity according to the position of the body and the suddenness of death. While, in some cases, the face is swollen and livid, the eyes prominent, and the tongue protruded between the contorted lips; in others, these striking signs of struggling are absent, and the features remain placid or unchanged. The latter condition is more frequently observed in persons whose death has been voluntary, but a greater or less congestion of the face is found in the majority of cases of hanging. Dr. Burrows¹ explains the difference observed in executed criminals by the unequal pressure of the cord in different cases. He

¹ "Diseases of the Cerebral Circulation," 1846.

says, "the knot of the rope is usually adjusted on one side of the neck, and it is found, after death, beneath the ear resting on the mastoid process. It has been often observed, in the dissection of such criminals, that the cheek and integuments on this same side of the head are not nearly so livid and congested as on the other side. The pressure of the rope has not completely obstructed the return of blood through the external jugular vein on the one side, though it has effectually stopped the current of the other. In such cases, it is also probable that the deep-seated internal jugular vein on the one side has been only partially compressed, and has permitted, to a certain extent, the return of blood from the internal parts of the cranium. Another efficient cause is the subsidence of fluid blood after death, while the body is yet suspended, through the cervical vessels, which are not completely obliterated by the pressure of the cord. Other channels not at all affected by the pressure of the rope, are the vertebral sinuses and the spinal plexus of veins." In addition to the marks of congestion in the head and face, the shoulders and upper part of the trunk are often livid. The hands and lower parts of the arms are also frequently of a purple color; the arms are usually straight and rigid, and the fingers clenched. A bloody froth is sometimes seen issuing from the mouth, and there are various marks of violence upon the neck, dependent, however, upon the nature of the ligature and the force employed. To these we shall presently refer in detail. The urine and feces are not unfrequently passed involuntarily,¹ the genital organs become turgid, and the semen in the male is said to be discharged. It would appear that the circumscribed bloody spots in the lungs, pericardium, and pericranium, which are met with in all the other forms of suffocation, are absent in this.

§ 499. When a person is found dead, suspended by a cord or other ligature, the first question which arises is, whether the act was his own or that of another. Before, however, this question can be satisfactorily answered, we must endeavor to determine whether the person was *living at the time he was hung*. Now, the fallacy of relying upon any one medical sign as indicative of death from a given cause, is nowhere more apparent than in death by hanging. A par-

¹ Tardieu (*Annales d'Hygiène Publique*, Jan. 1870, and *Journ. Psycholog. Med.*, vol. iv. 634) refers to some observations at the "Prison Cellulaire," where the evacuation of the urine and feces was noted in only two out of forty-one cases.

tial consideration of the sign of death from this cause, or a too confident reliance upon one or more of the phenomena usually observed in authenticated criminal cases or in public executions, will often lead the physician to an erroneous judgment. However strong the presumption may be that life was destroyed in this manner, rarely, if ever, can a perfect conviction be acquired by medical evidence alone. On the other hand, the moral and circumstantial evidence is, in a large majority of cases, so significant that medical testimony is superfluous. This will at once be evident, when it is remembered that hanging is usually a suicidal act. As, however, cases occur where life is first destroyed by other means and the body afterwards hung, in order to suggest a belief that suicide has been committed, it becomes necessary to consider what assistance can be rendered by medical facts to corroborate the evidence derived from other sources.

§ 500. II. *Marks of the cord.*¹—In persons who are hung, the cord always leaves some impression.² This may be deep or superficial,

¹ As to supposed marks in a question of suicide, see Dwight's case, *inf.* § 914.

² The following is certainly an anomalous case. The facts were observed at a public execution. The rope used was ten lines in diameter; the knot was large, formed of three turns of the rope, and, on the noose being tightened by the executioner, corresponded to the occipital protuberance. The bolt being withdrawn, the man fell through a space of seven feet and a half. "The body fell with a tremendous jerk, and oscillated for a few minutes; the arms and legs became rigid; the forearms flexed on the arms, the fingers upon the palms, and the thighs adducted and slightly drawn up towards the abdomen; the sternomastoid muscles were affected with spasms, and the hands became livid. After a short time the limbs relaxed; the legs approached each other, the toes pointing downwards; the hands became pale, fell down by the side, and the fingers became relaxed. The body, having been suspended for forty-five minutes, was cut down, and the cord removed from the neck. There was *not* any protrusion or unnatural suffusion of the eyes; the upper and lower teeth were half an inch apart, and the tongue was indented by them; the lips were rather livid, and the face pale; a slight depression marked the position of the rope; there was not any discoloration of the integuments of the neck, breast, or shoulders; the thumbs and fingers were flaccid; the cap in which the head had been enveloped was slightly stained by bloody mucus, which had flowed from the mouth and nose; the bladder was empty, the criminal having made water a few minutes before his execution: the penis appeared as if it had been recently erect: it lay upwards against the abdomen, and a thin, transparent fluid had stained the shirt;" numerous spermatozoa in it were detected under the microscope. Eighteen hours afterwards, the body having in the meantime lain upon its back it was found to be rigid, the face, lips, and ears were purple, the shoulders and

according to the strain upon it and its thickness and firmness. The skin under this mark acquires a peculiarly dense and tough character, and has been aptly compared, for this reason and from its color, to old parchment. It resembles exactly the dessicated skin, from which the epidermis has been detached, and which has been exposed to the air. This appearance is more marked a few hours after death, if the cord has been removed; its color is yellowish-brown, and the cellular tissue underneath is likewise condensed and presents a silvery appearance.

§ 501. This color must not be confounded with that resulting from an extravasation of blood under the skin, the latter being livid or purple. In cases which present the parchment-like appearance, there is often no ecchymosis, or this is confined to a slight line of lividity upon the margins of the depression. In cases, however, where much violence has been used, as in the execution of criminals, a livid mark is frequently observed. The two conditions are sometimes united, an ecchymosis existing upon the forepart of the neck, and the burnt appearance at the sides. Late writers agree that ecchymosis is of much rarer occurrence than was formerly supposed. Dévergie collected fifty-two cases of hanging, of which *three* only presented traces of ecchymosis. The cases are taken from Klein, Esquirol, and from his own observation. These results are confirmed by Orfila, Dr. Taylor and Dr. Casper.

§ 502. The impression of the cord, whether ecchymosed or not, is, however, not positive evidence that the person was hung when alive, since it has been shown beyond dispute that the same marks may be designedly made by hanging *after* death, while the body is yet warm. Orfila¹ suspended the bodies of persons, of different ages, at various

the upper and front part of the chest also; the mark of the rope was scarcely perceptible, there being only in one place, for about the extent of a quarter of an inch, a *slight* parchment-like discoloration of the skin. The portion of the skin covered by the rope having been removed, there was not found the slightest extravasation of blood, nor any peculiar silvery-white appearance of the areolar tissue, and none of the blood-vessels or muscles were at all injured; the thoroid cartilage was slightly flattened but not broken, and there was no dislocation or fracture of the vertebral column or injury of the ligaments or spinal cord. The brain, lungs and right side of the heart were congested with blood, and the mucous membrane of the larynx was of a bright-red color. (*On Death by Hanging, etc.* By Charles Croker King, M.D., M.B.I.A., Professor of Anatomy and Physiology, etc. Dublin Quarterly Journal, August, 1854.)

¹ *Annales d'Hygiène*, tome xxvii.

periods after death, from the moment life was extinct up to twenty-four hours afterwards. In every one he found the same brown and parchment-like furrow which has been described as produced in the living. Dévergie made similar experiments, with a like result. Those performed by Dr. Casper,¹ in addition, prove that when the bodies of persons have been hung within two hours after death, the mark upon the skin may be also slightly ecchymosed. In one case, the first of his series, a man was suspended by a double cord passed above the larynx *an hour* after death from typhus. In about twenty-four hours the body was cut down and examined. "Around the neck, between the larynx and os hyoides, was a double parallel mark, about three lines deep, *of a brown color, with a slight tinge of blue*. There were traces of cadaveric ecchymoses about the body. The whole appearance was such that any individual not acquainted with the circumstances would have supposed that the deceased had been hanged while living. Some spots on the right side of the neck were strongly colored. The skin of this part was hard, like leather, and in patches slightly excoriated. There was no extravasation of blood in the cellular texture, but the muscles of the neck beneath were of a deep violet color. In the two next cases, the body of a young man, aged twenty-three, suspended *an hour* after death from phthisis, and that of a man, aged seventy, two hours after death from dropsy, each by a double cord, and the bodies examined on the following day, the appearances were similar; there was a double depression around the neck, *of a yellowish-brown color, without ecchymosis*. The cutis looked as if burnt, and was like parchment, both when felt and cut. There was no blood extravasated in the cellular tissue beneath." In other cases, in which the body was hung at later periods after death, there was neither ecchymosis nor the parchment-like appearance, the mark of the cord being merely a slight depression in the skin. In the case, however, of a child, a year and a half old, on whose neck, *the day* after death, a small cord was tightly drawn, a small bluish-colored mark was produced. There was no blood, however, extravasated beneath it. The nature of the ligature, as whether it be a cord or some soft material, such as a handkerchief, does not make much difference in the character of the mark, except, of course, that where a cord is used it is better defined in every respect. The yellow

¹ Brit. and For. Med. Rev., vol. v. p. 615.

and parchment-like appearance may, however, be produced by either kind of ligature.

§ 503. The unavoidable inference from the experiments above referred to is, that the mark left by the cord is not a reliable sign of the hanging having taken place while the person was alive, since it may present the same characters if the body have been suspended shortly after death. If this mark, which, at first sight, would appear to afford the most palpable evidence of death by hanging, is open to this objection, much more so are those inconstant signs derived from the state of the countenance, position of the tongue, and discoloration of the skin. Turgescence and lividity of the face, ecchymosis upon the trunk, and protrusion of the tongue may render probable death by hanging; but, as they may all occur in any other mode of death by suffocation, are not indubitable proof that the body was suspended during life. Besides, these signs may be altogether wanting in persons who have evidently perished by hanging. Protrusion of the tongue is far from being invariable in hanging, and depends probably upon the position of the cord, and in some cases of the execution of criminals the face has been observed to remain quite pale.

In those cases where much injury has been done to the neck, or where the muscles are found lacerated, the cartilages broken, and the ligaments torn, while blood is extensively effused in the soft parts and in the spinal canal, there can remain, of course, no probability of these injuries having been produced after death. Such cases are, however, exceptional, being rarely met with except among executed criminals.

§ 504. III. *A rupture of the internal and middle coats of the common carotid artery* is occasionally found. Amussat was the first who observed it. Dévergie examined the bodies of thirteen persons who had died by hanging, and found it only in one case. Dr. Mildner¹ has reported an instance in which he discovered it, and refers to another published by a German physician. At the same time, he states the important fact that in his case the internal coats of the artery gave way very easily by stretching, as was proved by experiment upon the corresponding vessel on the other side. The experiment, moreover, was tried upon the carotids of persons of various ages, and the result obtained was that the rupture occurred only in

¹ Vierteljahrsschrift f. prakt. Heilkunde, 1850, Prag.

those taken from old persons, where the artery had already lost its natural elasticity. In six cases of death by hanging, Simon found laceration of the internal coat of the carotid only twice. In one of these cases the vessel was sound, and in the other not. From these observations, and from experiments upon the dead body, he further concluded that the occurrence of this rupture depends upon the thinness of the cord, and its position between the larynx and the hyoid bone, and that the weight of the body and the force of its fall favor its occurrence. It also follows from these data that the existence of such a laceration, even in the absence of external signs, renders probable the occurrence of death by hanging or by strangulation.¹ Malle found this lesion only twice in eighty-two bodies in which he imitated the act of hanging or strangling. The best mode of determining whether the rupture occurred before or after death would be by noting the signs of effusion in the adjacent cellular tissue. This has been clearly shown by Kussmaul,² who adds, as still more important signs, injection and swelling of the surrounding cellular tissue in those cases in which all of the coats of the artery have been divided. The amount of probability in favor of death from hanging will depend upon the degree in which these two signs exist.

§ 505. IV. *Tumefaction of the genital organs, and a discharge of semen in the male*, are regarded by some authors, but principally by Dévergie, as characteristic of death by hanging. There are many manifest objections to this sign, were it even constant in its appearance, or even if it were peculiar to this mode of death, neither of which it is. It will suffice, however, to refer to the testimony of Orfila³ upon this point. According to this eminent observer:—

1st. Spermatic animalcules may be found in the urine, for twelve hours after emission.

2d. They may be found in the urethra of persons dying of various diseases.⁴

3d. Congestion of the organs of generation may be produced by

¹ Virchow's Archiv., xi. 297.

² Id., xiii. 60.

³ Bulletin de l'Acad. Roy. de Méd., 1839.

⁴ Klein observed the penis in a state of erection in a man who had committed suicide by shooting: Schlegel observed freshly effused semen in a youth who had thrown himself from a church tower and fallen upon his head; and a case of poisoning with Prussian acid is related by Merzdorf, in which the penis was found in a state of semi-erection, with the spermatic fluid effused. *Vide* Siebold Handbuch der Ger. Med., § 343.

hanging persons after death. One of the cases was that of a man 50 years of age. Three hours after death, the penis was found to measure three inches and a line in circumference, and neither it nor the scrotum was discolored. The orifice of the urethra was full of a viscid liquid, containing seminal animalcules. The body was *then* hung, and eight hours afterwards the scrotum and penis had acquired a violet color, the circumference of the latter had increased by seven lines, and the meatus still contained spermatozoa. In another case, the body of a man aged 49 was hung five hours after death, and left suspended three hours and a half. The penis, which, before, was slightly turgid, was now erect, and formed almost a right angle with the abdomen; it had increased nine lines in circumference, was of a violet color, and all the veins about it were very much distended. The vesiculæ seminales were very full, and at the orifice of the urethra there was a drop of viscid fluid, containing a great number of spermatozoa, of which many were alive. Congestion of the genital organs, and an ejaculation or discharge of the seminal fluid, having thus been observed in those dying from other causes, and in those who have been hung *after death*, cannot be looked upon as a sign of death by hanging, unless these two objections are first satisfactorily answered. Casper emphatically states that he never saw erection of the penis in a person who had died by hanging, and in a very small proportion of cases only a slight degree of turgescence. In seventy-seven cases collected by Casper,¹ the seminal discharge was observed in nineteen only, and in thirty-five cases reported by Remer, congestion or ejaculation was found only in fifteen. In some observations upon suicide by strangulation, Dr. Brierre de Boismont states that he has found the fact of ejaculation mentioned in one-seventh of the cases (the whole number being 114), and of erection in one-tenth. In one case, in which the traces of the emission were very abundant, there was a dislocation of the second vertebra upon the first.²

§ 506. V. *Condition of the eyes.*—Dr. Dyer³ has made some observations of great value on the person of Anton Probst, who was hanged in Philadelphia June 8th, 1866, for the brutal murder of a whole family, eight in number.

¹ Brit. For. Med. Rev., vol. v. p. 615.

² Ann. d'Hyg., Juillet, 1848.

³ New York Medical Journal, vol. iii. 1866, p. 416.

Two days before the execution, Dr. Dyer made an ophthalmoscopic examination of Probst's eyes, using the light from an ordinary lamp. Nothing unusual was observed except a slight prominence of the eyeballs and a sluggishness of the pupils to respond to light; the optic media were clear and the fundus normal.

The rope used in the execution was five feet six inches long, five-eighths of an inch in diameter, and the fall was three feet. The knot was placed under the left ear, and death was very quiet and rapid.

The body hung thirty minutes, and was then immediately removed to the dissecting-room.

"Post-mortem examination thirty-five minutes after the drop fell. Body and head moist and warm; there had been an emission of semen; face was livid, and the upper lip discolored; abrasions of the skin under the right ear, and a deep red mark all around the neck.

"The eyeballs were not more prominent than before death; lids were closed and not discolored; there was scarcely any tension in the eyeballs; corneaæ a little dull; pupils a little more dilated than before, and moist from mucus.

"The examination of the eyes with the electric light gave the following results: Right eye—there was a line running transversely across the lens, and about a line below the centre. From it, at various angles, ran short and long fine lines, very near together but not regular. This line had an iridescent or opalescent appearance, and as it was illuminated, a gentleman standing behind remarked that it looked like a crack in a cake of clear ice. At first I thought it a film of mucus on the cornea, but soon saw that it was in the lens. It was a fracture involving the anterior capsule, and extending in a horizontal plane backwards into the substance of the lens. It gave even to those present, unaccustomed to the ophthalmoscope, the idea of a plane extending backwards.

"On rotating the ball downwards, the fracture could be seen to stop about the centre of the lens, and to end in several lines projecting backwards, longer than the rest. The little fissures running upwards and downwards from the main transverse fissure were of different lengths; more than half of those on the lower side ran down to the margin of the pupil; almost all those on the upper side extended above the horizontal diameter of the lens, and the longer ones perhaps a line further.

"The whole lens had a most beautiful iridescent appearance, which

was greatest in the line of the main fissure. This was determined by strong convex glasses. Nothing of the fundus could be seen, not even a trace of a vessel.

"The left eye presented the same transverse line, a line and a half below the centre of the lens. It was evidently the same thing as in the right, only less in extent. The line had very short lines running upwards and downwards, which were very close together. They could only be seen with a strong glass, and gave the line a feathery look. I judged that here the crack was confined to the capsule. The line was perfectly evident to a person standing three feet behind the examiner. The fundus could not be seen. Neither pupil contracted under the light. The body was then laid on the table, and the battery used to contract the various muscles of the body. The flexors of the arms and legs responded, and I tried, from curiosity, to stimulate the contractile films of the iris, but without success.

"The eyes were then removed, and four hours afterwards carefully examined. Dr. S. W. Mitchell assisted me. The condition of the right lens was precisely as described above: Lens in place; fractured transversely from *edge* to *edge* of the capsule, one line below and parallel to the horizontal diameter of the lens. From this crack a fissure extended backwards into the substance of the lens, as far as the middle suspensory ligament, which was not ruptured. Retina not detached; eyes normal, except as above mentioned; left eye showed a line difficult to distinguish, but made out with certainty, corresponding in position to that of the right eye. It was undoubtedly a fracture of the anterior capsule. The weight of the fall coming principally on the right side (the knot being under the left ear), probably explains the difference in the condition of the two eyes."

Dr. Dyer, with the view of further investigating this subject, procured three "very large dogs," which he hanged, the drop being three feet.

"No. 1 died without a struggle. A fracture was found to extend through half the lens of one side and across the capsule of the other. Knot on the opposite side of the greatest lesion in both cases. Dog No. 3 died with convulsions, which lasted a short time. Lesion found in one eye well marked, the other eye normal. Dog No. 2 died with prolonged convulsions; no lesion could be observed."

§ 507. VI. *Was the hanging suicidal or homicidal?*¹—The proba-

¹ See *supra*, §§ 272, 297, 483, *infra*, §§ 825, 835.

bility is always in favor of the former, not only from the known frequency with which this mode of self-destruction is chosen, but also from the evident difficulty of accomplishing murder in this way. The distinction between them seldom rests entirely upon medical grounds. Taken alone, the medical signs will rarely be sufficient to determine the question. They can afford often only a probability which must be confirmed by moral and circumstantial evidence. The latter, indeed, is not always beyond the cognizance of the physician, for he may be called upon to state the verisimilitude of the inferences drawn from it. Thus, if the body of a person found hung exhibit traces of violence externally, or some poisonous substance be discovered in the stomach, the opinion of the medical expert may be required not only in reference to the possibility of death having resulted from these causes, but also whether they were immediately fatal, or whether there did not remain sufficient time and strength for subsequent self-destruction by hanging. Questions of this nature can be answered only upon general principles, it being impossible to lay down any positive rules which would be applicable to all cases that may arise. We can, therefore, in the ensuing remarks, allude to them in only a cursory manner. The chief facts upon which the physician will base his decision, are the position of the body, the marks of violence, both external and internal, and finally, both of these elements in connection with the ordinary signs of hanging heretofore enumerated.

§ 508. 1st. *Position and condition of the body.*¹—Experience has fully demonstrated the fact, that a complete suspension of the body is not necessary to produce death. The tenacity with which those who are bent upon suicide await the catastrophe, from which they could with ease, escape, will afford a key to the explanation of the cases of death by incomplete suspension. It is, moreover, not improbable, from what is known of the sensations produced by a constriction of the throat in those who have experimented upon themselves, or who have been restored after apparent death by hanging, that consciousness and sensation are very speedily lost, or first give way to an indescribable feeling of pleasure. Dr. Schneider, who succeeded in restoring a man, who had attempted suicide by this means, states that his patient was quite angry at being awakened from the delicious slumber

¹ See *supra*, §§ 297, 302, *infra*, §§ 796, 845.

into which he had fallen.¹ Wepfer and Morgagni relate, that, having interrogated certain criminals as to their sensations, who had been hung, but afterwards restored to life, they answered, that they had not suffered at all, but had simply remained without sensation and plunged, as it were, in a profound sleep. Mr. Fleischmann, in experimenting upon himself, found that when the cord pressed upon the trachea, or between the principal cartilages of the windpipe, consciousness was almost immediately lost, but that if the obstruction to the entrance of air into the lungs was not so great, by constriction, for example, upon the thyroid cartilage, the effect was less rapid. We may, therefore, explain the fact of death in cases of incomplete suspension by a want both of the will and the power in the person to escape.

§ 509. Dr. Duchesne,² from an examination of fifty-eight cases, arrived at the conclusion that suicide by strangulation may be admitted, whatever the position in which the body may be found, and even if resting upon the feet. Dévergie also, from a review of a very large number of cases, states that suspension followed by death may take place with the feet or knees resting upon the ground, or with the body in an almost horizontal posture, and that the weight of the shoulders and chest is sufficient to exercise a fatal constriction upon the neck. Dr. Taylor³ says, "I have now before me the reports of eleven cases of suicidal hanging or strangulation, which have occurred within the last few years. In three, the deceased were found nearly recumbent; in four, in a kneeling posture—the body being more or less supported by the legs; and in four, the persons were found sitting." A case has been reported, in which the body was entirely supported by the bedstead, while the neck rested in a loop of leather, depending from the bedpost. The case was evidently one of suicide.⁴ Many other similar cases are on record, which it would be tedious to enumerate. The facts here stated derive their importance chiefly from the prevalent notion, that, if the body were not completely suspended, the suspicion of homicide would be strengthened. This opinion was held and urged by some medical jurists in the case of the Prince de Condé, who was found hanging in his room from the curtain rod, with his toes touching the floor. The attitude

¹ Henke's *Zeitschrift*, 1851, 43 Erg. H.

² Ann. d'Hyg., tom., xxxiv. pp. 141 and 346.

³ Med. Jur., Am. ed., p. 505.

⁴ Med. Times, Aug. 7, 1852.

in which the body was found raised some suspicion of foul play, and a most accurate investigation of all the circumstances connected with the event was instituted, from which it appeared to have been a case of suicide. In the journal where this case is reported will be found also several instances of self-destruction by hanging, where the bodies were found in the most extraordinary situations and attitudes, accompanied with plates of the same.¹

§ 510. Tardieu² found in 261 cases of incomplete suspension, 168 in which the feet were recorded as resting on the ground; the body kneeling in 42; extended and lying in 29; sitting in 19, and squatting in 3.

§ 511. The inference to be drawn from the position of the body is, therefore, that, *in itself*, it proves neither homicide nor suicide. A person may hang himself from a high beam or the branch of a tree, or may choose to strangle himself by simply placing his neck in a noose or loop and lean forward against it until he loses his consciousness. On the other hand, a murderer may find it more convenient to hang his victim imperfectly than to suspend him from an elevated position. In either case, the position in which the body is found is neither a safe criterion of its position at the moment of death, nor an index of the voluntary or involuntary character of the act. The cord, in many cases, slips or stretches by the weight of the body or the momentum of the fall, so that the latter will come to occupy a lower position than at the moment when unconsciousness was produced by constriction of the neck. And, even were this not the case, the more or less imperfect suspension of the body cannot, as we have already seen, enlighten us with respect to the question of homicide.

§ 512. It is hardly necessary to state that, if the hands or feet are found tied, the inference is not necessarily warranted that the act was homicidal. In such cases, the opinion of the physician will be guided, in a measure, by the remaining indicatory evidence. Thus, if an individual is found suspended from a position which he could not easily have reached, or to attain which there was no obvious means, the fact of the hands or feet being tied will afford certainly a strong presumption of homicide. But if, on the other hand, chairs or tables

¹ Ann. d'Hyg., tom. v. p. 165.

² Ann. d'Hyg., Jan. 1870, and Journ. of Psycholog. Med., vol. iv. p. 637.

or any other means of support are found near the deceased, this presumption will no longer hold, since it is evident that the person may have, himself, applied these ligatures, and then hung himself by thrusting his head through the noose and overturning or pushing away the means of support.

§ 513. It is, however, of importance to observe whether ligatures upon the wrists are tied in such a manner as could have been done by the person himself. The following remarkable case¹ may be cited in illustration: "John Robinson, a married man, aged thirty-four, was admitted into the asylum of the workhouse, on the 24th of November last, having been in a desponding, melancholy state some time, caused by religious delusions. He had attempted to destroy himself several times, by throwing himself out of the window, and rushing into the fire, and said he had a desire to hang himself. On admission, his hands were found much burnt. He refused his food for some days, but continued gradually to improve for the ensuing six weeks, and went to bed in a tranquil state on the evening of the 5th inst., about nine P. M. He was found next morning at half-past six, suspended to a bar of the window of his cell, by means of the bandage which he had taken from his hands and folded double. His wrists were fastened together behind his back, by a piece of bandage, in which two running nooses had been made and slipped over his hands, and then pulled tight. His ankles were tightly fastened together, and his night-cap was pulled down over his face, below his nose. The toes almost, if not quite, touched the ground; the body hanging between the bed and a night-chair, with the face towards the wall. On cutting him down, it was apparent, from the coldness and rigidity of the body, that he had been dead some time. The features were quite composed. No discoloration of the face; eyes in the natural position, if anything a little depressed; no froth at the mouth or protrusion of the tongue, or lividity of the neck, but, on the right side, extending nearly from the angle of the jaw to the commencement of the thyroid cartilage, the skin was cut through, as if with a blunt knife, to the depth of nearly a quarter of an inch. The hands and feet were extended and pointed downwards. No erection of the penis, or emission of semen, urine, or feces. The body, in fact, presented the appearance of that of a person dying from other causes, and being

¹ Lond. Med. Gaz., vol. xiv. p. 388, by Mr. J. H. Taylor

afterwards suspended. It was only the absence of suspicion of any kind that made the cause of death appear satisfactory. He must have first taken the bandages from his hands and cut them into suitable pieces, then stood on the night-chair, then tied his legs, then fastened the noose around his neck and pulled the cap over his face, and, lastly, slipped his hands behind his back, put the nooses over his wrists, and then jumped off. His friends would not permit a post-mortem examination, and the coroner did not consider any medical evidence requisite."

§ 514. 2d. *Marks of violence.*—Under this denomination may be included all those injuries which affect the question of homicide. For the sake of practical convenience, the various injuries to the neck, consisting of those which affect the windpipe, as well as those of the cervical vertebræ, may be classed together. Under the former are embraced, fracture of the os hyoides, of the cartilages of the larynx, and laceration of their intervening membranes and ligaments; under the latter, fracture and displacement of the vertebræ, and rupture of their ligamentous bands and intervertebral substance. The consequences in both cases are extensive laceration of and effusion of blood into the structure of the neck; and in the injury to the spine, compression of the spinal marrow, either by the displaced vertebræ, or by effused blood. It is at once apparent that a great degree of violence will be required to produce such extensive and serious injuries, and will, therefore, in almost every case exclude the idea of suicide.

§ 515. The injuries above enumerated are sometimes made in criminal executions, where the fall is great, and the body at the moment of the execution is violently rotated by the hangman, but even in these cases luxation and fracture of the vertebræ are of rare occurrence. Orfila states that, in the bodies of fifty persons who had been hung, he met with a fracture of the os hyoides in only one case, while he had *never* met with fracture and luxation of the vertebræ. In the bodies of persons which were hung after death, for the sake of experiment, he succeeded, in some cases, in producing a rupture of the yellow ligaments of the spine, and the intervertebral substance. In one case the odontoid process was broken but not displaced, and in another the second vertebra was broken horizontally. In all of these experiments, however, both the extending and rotating force was extremely great, such, indeed, as can hardly be conceived in a case of suicide.

Dr. Houston, of Dublin, in an account of the appearance found in two executed criminals, says: "The cervical vertebræ were unbroken, and the spinal marrow and brain presented no trace of injury. In both, the sterno-mastoid muscle on the right side (the opposite to that on which the rope was applied) was ecchymosed, contused, and broken; that of the left side was only slightly bruised. The os hyoides and thyroid cartilage were completely severed from each other." A few shreds of the small muscles of these parts alone remained, and nothing, in fact, but the skin interposed between the rope and the cavity of the pharynx.¹

§ 516. There are two well-authenticated cases of suicide by hanging in which injury to the cervical vertebræ has been met with, and in these it was far less important than in any of the experiments referred to, or in cases of judicial or homicidal hanging. One is reported by M. Ansiaux, of Liege. He found in the body of a woman who had hung herself, that the posterior ligaments of the spine between the first two cervical vertebræ were ruptured, and the transverse ligament of the atlas so stretched that the odontoid process of the second vertebra was locked against the articular surface. The perpendicular and oblique ligaments were not injured. The first two cervical vertebræ were considerably separated behind, the spinal marrow was injured, and extravasated blood found at the place of separation. The deceased was a stout woman; when discovered, she was hanging from a beam of the ceiling, and her feet were about a foot and a half above the ground. Near her there was a chair overturned.

§ 517. Another case is reported in the *Lancet* by Mr. Campbell de Morgan.² "A married woman, aged fifty, worn out and exhausted by disease, was found hanging quite lifeless from the rail of a bed, which was not more than five feet eight inches from the ground. The front of her body was turned round towards the bed, the head thrown forcibly back—the knot of the ligature, an old silk handkerchief, being placed in the middle of the under side of the chin. Her heels were about three inches from the ground, the knees being on a level with the bed-frame, and resting against it. The body was seen by a medical man, about an hour after it was cut down—the features were perfectly calm, and there was no trace of congestion about the face; it

¹ Dublin Hosp. Reports, vol. v. p. 317.

² Lancet, Aug. 10, 1844, quoted by Taylor, Med. Jur. p. 503.

was pale and in all respects natural. There was no lividity; the eyes were neither injected nor prominent; the tongue pale, lying far back in the mouth, and without any mark of indentation. The cord-mark well defined, and like parchment, dry, brown and hard, without any ecchymosis, but with a thin line of congestion at the upper edge of the groove—it was very deep at the back of the neck, just over the atlas, probably owing to the head hanging backwards. The mucous membrane of the stomach was pale; the lungs natural; no congestion of the large veins, or of the cavities of the heart; the two ventricles contained about an equal quantity of blood. These appearances seemed to show that death was not caused either by asphyxia or by cerebral congestion. Neither the trachea nor the great vessels of the neck could have sustained any pressure or constriction. The deep muscles over the second and third cervical vertebræ were ecchymosed; this ecchymosis extended to the sheath of the spinal marrow; and on the left side, and exterior to the sheath, there was an extensive effusion of blood firmly coagulated. There was no displacement of the second or other vertebræ, and the ligaments were sound; but between the third and fourth vertebræ, there was unusual mobility, as if they had been stretched. In this case, the body was not heavy, and the fall, if any, could have been but trifling. The effusion on the spinal marrow was the cause of death; and its origin was sufficiently explained, by the falling back of the head and sudden bending of the cervical vertebræ. Her husband and family were in an adjoining room, but heard no noise; it was only by accident that the deceased was discovered."

In a case of suicide, reported by Dr. Mildner,¹ the left corner of the os hyoides was broken and the adjacent soft parts infiltrated with dark and fluid blood. The person was a robust and heavy woman of forty-eight years of age. The indentation, which was of a yellowish-brown color, and of a parchment-like and desiccated appearance, was also excoriated and deeper on the side corresponding to the fracture.

§ 518. It is well known that manual strangulation is one of the most frequent complications of homicidal hanging, and hence the injuries to the neck here referred to will throw much doubt upon the idea of the act having been voluntary. A murderer who strangles his victim will commonly use more violence than is necessary for his

purpose, and thus produce some of the serious injuries to the neck which have been described. But in such cases we are seldom left without a guide to the nature of the deed. The thumb and finger will have left their traces upon the throat, differing widely from the uniform discolored furrow left by the cord. Or if the act of strangulation has been accomplished with anything in the nature of a cord, the direction of the mark will be, if not horizontal, at least not oblique in the same manner as that produced by suspension. This distinction manifestly applies only to those cases in which the person is fairly hung, and in which the cord has formed but one noose around the neck, because if it has been twisted twice around it, the lower mark will generally be circular and horizontal. Hence, if the marks of fingers upon the throat, or a *horizontal* discolored impression upon it, be found, there will be good reason to believe, even if the person be found hung apparently with a single noose, that it was an act of violence committed by another upon him. The probability of this will be much increased by the existence of serious injury to the subjacent parts of the neck. A full confirmation of the fact can, however, only be obtained from other moral and collateral evidence, into which it is rather the province of the jury than of the physician to inquire. In the following case, the evidence of homicide was derived from various sources. "The deceased was found sitting in a corner of her room, with a narrow tape around her neck, hung loosely and singly over a small brass hook, about three feet above her head. Her clothes were placed smoothly under her, and her hands stretched out by her side. There was a severe bruise on the right eye, and there were marks of blood on the tape, as well as on the floor and wall of the room at a distance from the body. There was a stain of blood on the knot of the tape where it passed over the hook; and there was no blood on the hands of the deceased. The windpipe for about an inch and a half was lacerated longitudinally in its rings, and there was a deep mark round the neck in the course of the double tape, as if from great pressure applied by some person, or from the weight of the suspended body. The latter hypothesis was untenable. The body of the deceased did not weigh less than 126 pounds, while the tape found round her neck broke with a weight of 49 pounds; hence, the deceased never could have been suspended by it." The prisoner confessed the crime.¹

¹ Taylor, Med. Journ., 5th ed. 754.

§ 519. *Other marks of violence* are found in every variety upon the person of the hanged. We subjoin three cases, one of homicide and two of suicide by hanging, to illustrate the nature of the evidence required for the settlement of doubtful cases.

A gamekeeper, thirty-two years of age, robust and hardy in his constitution, was found hanging upon a tree in the forest, three days after he had left home in pursuit of poachers. The deceased was suspended by his cravat to the branch of a young oak tree, and so near to the branch that the right side of his face was in contact with it. His feet were rather more than three feet from the ground, which bore no traces of a struggle. The tobacco-pipe of the deceased was found about forty paces distant from the tree, but his hunting-knife and rifle were nowhere to be found. The cravat had left the following mark upon the neck: a groove from a half to three-quarters of an inch wide, the skin in it brown and parchment-like, and over the thyroid cartilage three-quarters of an inch deep. The indentation was more superficial upon the left side. The direction of the mark was horizontal to the back of the neck, and thence upwards on the right side to the angle of the jaw. At this point, corresponding exactly to the knot of the noose, the skin was very deeply ecchymosed, and also excoriated. The right ear was greatly discolored, as well as the integuments around it. The skin of the face and head was excoriated in many places, and bruised and lacerated also. There were, moreover, a great number of small lacerated wounds upon the hands and arms, and bruises on the knees. No other external injuries of serious character were found. The os hyoides was broken, and the muscles and soft parts of the neck infiltrated with blood. The horizontal direction of the mark upon the neck, the extreme tightness with which the cravat was fastened upon it, the fracture of the hyoid bone, together with the large number of trifling wounds, led the examiners to give as their opinion that the deceased had been overpowered by numbers, thrown down, strangled, and afterwards hung.¹

§ 520. Another remarkable case, in which the *suicidal* nature of the act was clearly determined, is reported by Dr. Heyfelder; it occurred at the prison at Sigmaringen, in Germany.² One of the

¹ Henke's Zeitsch., 1835, H. 3.

² Id. 1849, H. 1. As to suicide or homicide, see *supra*, §§ 272, 297, 507, 914.

prisoners, who a few hours before had been left by the turnkey in his cell, of which the latter alone had the key, was found hanging from the jamb of the door. The ligature used was his own silk cravat, twisted into a cord, three and a half feet long, two inches broad, and four lines thick. His head was sunk upon his breast, his face pale and without expression, the lips blue, eyes, tongue, and mouth unchanged in position and appearance. The arms were brought forward over the stomach, and were rigid; the fingers were bent, and the feet extended and touching the ground. *The mouth of the deceased was stopped with his own handkerchief.* The mark of the cord was oblique, commencing between the os hyoides and thyroid cartilage, and ran upwards and backwards to the occiput. The skin was brown, and in some places shrivelled, but there was no ecchymoses. Five contused and lacerated wounds were found upon the sides of the head; the right ear also was lacerated, and a portion of the head and face covered with blood. On the sharp edge of the window-sill, which was only two feet from the floor, traces of dried blood and hair were found, and on the wall below the window there were several lines of dried blood running towards the ground. Had this case occurred in any other place than in a locked prison-cell with a single occupant, the wounds upon the head and the handkerchief thrust into his mouth would have raised a very strong presumption of homicide, and perhaps involved the life of an innocent person.

§ 521. We would here refer the reader to another case of hanging, singular and important from the fact of the woman having previously inflicted upon her own head, with a hatchet, no less than *fifty-five* wounds, some of which penetrated to and fractured the bone. Besides these, there were twenty-six superficial incised wounds upon the breast and stomach, made from three to four days previously, as they were in a state of suppuration. The loss of blood must have been very great, being estimated at three pounds. Yet this woman had been able to leave the room where she had committed this violence upon her own person, and proceed to a stable at the back of the house, and there, mounting upon a milking-stool, attach the cord to a beam, and consummate the act of self-destruction. In this case the indentation of the cord left no discoloration of the skin, probably owing to the loss of blood. The deceased had long been melancholy, and this,

together with other facts and circumstantial evidence which came out upon investigation, left no doubt that the act was suicidal.¹

§ 522. The influence which the discovery of wounds and marks of violence upon the body of a person found hung, will exert in the determination of the voluntary or passive character of the act, must be decided, in each case, by the light obtained from an inquiry into the possible motives for suicide, into all the circumstances connected with the act, and into those general principles elsewhere referred to for the discrimination between self-inflicted and homicidal wounds. In some cases the injury may have been of accidental origin, as indeed may the hanging itself, but the case is hardly conceivable, in which the true nature of the latter could not be ascertained, or the former not rendered probable. In conclusion, we would repeat the statement, that hanging is preëminently a suicidal mode of death, and strong evidence, both medical and other, will be required in any given case to overthrow this presumption, it being far more likely that a person should inflict barbarous injuries upon his own person, and then hang himself, than that a murderer should resort to so difficult and unusual mode of assassination. This form of homicide can hardly be regarded as practicable, unless there be an exceeding disproportion between the strength of the murderer and that of his victim. It can only be taken into consideration, when the body found hung is that of a very young or feeble person, or one whom infirmity or temporary intoxication may have rendered helpless.

¹ Henke's Zeitschrift, 1850, H. 1 (Krügelstein).

CHAPTER XI.

DROWNING.

- I. How producing death, § 523.
- II. Time when the body will float, etc., § 525.
- III. Signs of death by drowning, § 527.
 - 1st. Paleness and coldness of skin, etc., § 528.
 - 2d. Abrasion of the hands, etc., § 529.
 - 3d. Water and froth in the lungs, § 530.
 - 4th. Water in the stomach, § 532.
 - 5th. Signs of asphyxia, § 534.
 - 6th. Marks of violence, § 535.
 - 7th. Putrefaction, etc., § 536.
- IV. Accidental or otherwise, § 538.

§ 523. I. *How producing death*.—The immediate cause of death in drowning has been the theme of considerable discussion. At present, however, from the numerous experiments made to determine this point, there can be but little doubt that the true cause of death in drowning is *suffocation*. By this word is meant, the prevention of the ingress of air into the lungs. The truth of this statement will be apparent, by a consideration of the external and internal condition of the body after death from this cause.

Before, however, proceeding to describe the post-mortem appearances in the drowned, the act of drowning demands our attention. A person who falls alive into the water, and is unable to swim, sinks at once below the surface. Presently the impossibility of respiring forces him to struggle to reach the air, and the effort to respire is instinctively repressed until this is accomplished, when he gasps convulsively, and takes in with the air a certain quantity of water also, which is unavoidably swallowed. Sinking once more, the air in the lungs is partially expelled by an act of expiration, and bubbles are seen to rise to the surface. New and probably involuntary efforts to breathe are made, and the water, being thus drawn into the lungs, instead of air, brings on an act of coughing, by which water and air are both expelled. These efforts alternate for a few moments. If again successful in reaching the surface, the death struggle is a little

prolonged; but the privation of air soon benumbs both the mental and physical faculties, and with gradually lessening effort the unconscious and exhausted body sinks lifeless to the bottom.¹

The physiological explanation of this manner of death is found in the fact that, in consequence of the privation of air, the blood ceases to undergo in the lungs those changes indispensable for the maintenance of life. Hence the functions of the brain and nervous system are paralyzed, and presently the muscular and respiratory movements also. The heart continues to pulsate feebly for a short time after the stoppage of the voluntary functions of the body; but the blood, having become completely venous, is not long capable of affording the necessary stimulus to this organ.

§ 524. The rapidity with which life is extinguished by drowning depends upon the frequency and completeness of the renewal of the air in the lungs. If the individual have come several times to the surface of the water and breathed, he will, of course, not die so quickly as one who has not had this opportunity; but it is probable that in cases of drowning, where the person has not been able to support himself above the water, by any extraneous aid, life is extinct within five minutes. Where the submersion has been complete from the beginning, life can scarcely be prolonged more than two minutes. "Mr. Woolley, the surgical attendant at the Receiving House of the Royal Humane Society in Hyde Park, believes that very few lives are preserved after four minutes of complete submersion. In the year 1840, however, he met with a case in which a person recovered, although there was reason to believe that he had been five minutes under water, and a similar instance has since come under his observation."² In an account of the pearl-fishery, by the Rev. Mr. Corder, who resided several years at Columbo, he says, "that he observed with attention the time during which many of the divers remained under water at the depth of seven fathoms. Some of them performed the dip within the space of one minute; others came up in one minute and twenty seconds. Some persons, who have frequently attended the fisheries and accompanied the divers to the banks, consider one minute and a half to be the longest period during

¹ M. Beau concludes, from numerous experiments upon animals, that death by drowning is always a suffocation produced by the arrest of breathing from spasm of the muscles of the larynx. Archives Gén., Juill. 1860, p. 64.

² Brodie's Lectures on Pathology and Surgery.

which any diver remains under water. Other gentlemen who are willing to allow the greatest latitude, say that they certainly never knew a diver to exceed two minutes.¹ The same observation was made by Dr. Lefevre, of Rochefort, relative to the Navarino sponge-divers; he says that there was not one who could remain entirely submerged for two consecutive minutes.² Nevertheless, some cases, said to be authentic, have been reported, in which recovery has taken place after a much longer period of submersion.³ The only exception to this rapid death in complete submersion is when the person falling into the water is in a state of syncope. As it is known that one may remain without respiration and circulation, in a state of apparent death, for a few minutes, or even longer, it may be admitted that occasionally a person falling or thrown into the water may suddenly faint from terror, and be rescued before respiration has returned. In illustration of this fact, a case related by Plater is often cited. A woman condemned to be drowned for infanticide, fainted away at the moment she was thrown into the water. She was left in it a quarter of an hour, and upon then being drawn out recovered her senses.

§ 525. II. *The time at which a drowned body will float, or rise again to the surface after having been once sunk, appears to be subject to considerable variation. It depends upon the rapidity of the access of decomposition, and the body therefore rises sooner in summer than in winter; upon the density of the water itself (whether salt or fresh); upon the age and sex of the individual, children, females, and fat persons being comparatively buoyant; and also upon whether or not the body is clothed. The question is one not merely of scientific interest, but, as will be seen in the following case, may have important legal bearings.*

“*Voltan and Adams v. The National Loan Fund Life Assurance Company.*

“The action was brought by the plaintiffs, as assignees of this policy, to recover on a policy of insurance issued by the defendants upon the life of one Conrad Shoemaker. The insurance was for \$10,000, and the policy was issued on the 15th of May 1850. The premium on the policy was payable quarterly in advance.

“On the 23d of August, 1850, Shoemaker paid the premium for

¹ Brodie's Lectures on Pathology and Surgery. ² Med. Gaz., xvi. 608.

³ *Vide Assoc. Med. Journ.*, April 22, 1853; *Med. Gaz.*, vol. xxi. p. 448; *Id.*, xxix. p. 78; and *Med. Times*, Dec. 2, 1848, p. 125.

the quarter ending on the 15th of November, 1850. On the 4th of September 1850, the plaintiffs alleged that Shoemaker was drowned, while on a fishing excursion with one Ottman, the German, in the waters of the bay of New York, about opposite to Hoboken, and nearest to the New Jersey shore. The theory of the defence substantially was, that Voltan, Martin and Shoemaker (Germans) had entered into a conspiracy to defraud the insurance company, by causing an insurance to be effected for a large amount on the life of Shoemaker, and subsequently secreting and disposing of him.

"To obtain a recovery, it was, of course, necessary that the plaintiffs should satisfy the jury of the death of Shoemaker. This they attempted to do—1st, by the testimony of Ottman, who swore to the circumstances of his drowning, and of the time and place, which was on the 4th of September, 1850, about dusk, in the Hudson River, opposite Hoboken, and near midway of the river; 2d, by showing that a body *found floating* on the *river* near Jersey City, on the 7th of September, 1850, was the body of Shoemaker.

"This body was examined by the coroner of Jersey City, soon after being discovered. The skin was somewhat bleached, and the face disfigured; a part of the lips being eaten off by crabs, lobsters, or fish of some kind. After examination, it was interred by direction of the coroner.

"It was not attempted to identify this as the body of Shoemaker, except from some of the clothes found on it, and particularly the handkerchief on the neck. The handkerchief on the body was the half of a black silk one, with stripes, and cut from its mate diagonally. It was shown by a witness that Voltan, a short period before the alleged drowning, had purchased a handkerchief for his son, and, at the suggestion of Voltan's daughter, it was cut in two, and half of it given to Shoemaker, after being hemmed by her; the other half to the son. The part retained by the son and the part found on the neck of the body were exhibited in court and found to match in color and stripes, and when laid together, formed a square, and although cut across the stripes, matched in the run and character of the stripes. The pantaloons were also shown to be of the same general character worn by Shoemaker, about the time of his alleged death.

"To rebut the presumption that this was the body of Shoemaker, a number of witnesses were sworn on the part of the defence, with the

view of showing that, as a general rule, bodies will not rise and float, even when the water is of the temperature that it is in the month of September, under from six to ten days. As Shoemaker was alleged to have been drowned on the 4th of September, and the body was found floating on the 7th of September, three days afterwards, if it were universally true that bodies do not float until decomposition takes place, in the waters of the Hudson, under from six to ten days, then this could not be the body of Shoemaker.

"The first witness sworn on the subject was *Dr. Barent P. Staats*. He testified that he had had occasion, in the course of his professional reading, to examine the subject as to how long a body will remain in the water before rising and floating. That it depends on the time of year, and the temperature of the water, and the size and make of the man. When the temperature is 65°, he did not think any body would rise in less than seven to ten days. On his cross-examination, he said he did not know that he could point out any book that he had consulted.

"*Dr. Benj. Budd* was the next witness called. He testified that he was assistant-coroner in New York—has had occasion to see many drowned bodies—some one hundred and fifty. Never knew a body to rise in less than six days, unless some mechanical means were used to raise it. Should judge the body found at Jersey City to have been in the water from ten to twenty days. Has never known a body to be in the water less than seven days that was mutilated by fishes. Bodies that have been hooked up in three, four, or five days, have not that peculiar bleached appearance as those present that come up from seven to ten days. The body will not rise until decomposition has commenced. He is twenty-five years of age, and has only studied the book of experience.

"*Dr. Seth Geer* was then called. He testified that he was coroner in New York for eighteen months, during which time he had examined between three and four hundred drowned bodies. The general rule as to the rising of drowned bodies in the harbor of New York, is from eight to ten days. In his judgment, from the description given, the body found at Jersey City, had been in the water two or three weeks. Never knew a body that had been in the water but three days mutilated by fishes. The hotter the water, the sooner the body would bleach.

"*Andrew Blakeley* was then called. He testified that he was

deputy coroner in New York a little over two years, during which time he examined rising two hundred and fifty drowned bodies. Drowned bodies would rise in the summer months on an average of from six to ten days, as he found out by experience. He did not remember any case of rising when the body had been in the water but three days. He never saw a drowned body that had lain in the water but three days eaten by fishes. On his cross-examination he stated that he had never read any medical book on the subject, nor did he know, except from testimony taken as coroner, of a body lying under water seven days. It takes a body from six to eight or ten days to get bleached. He means by bleaching, a soaking of the body—a general softening and whitening of the body.

"*Henry C. Van Wie* was called on the part of the plaintiffs. He testified that he was coroner of the county of Albany for four years. Has held a good many inquests on drowned bodies. Has known two or three instances where the bodies have risen in three or four days. In warm or sultry weather they will rise in from three to four days. They will bleach out directly in warm weather. They will be mutilated by fishes directly after decomposition takes place. Remembers an instance of holding an inquest on a body that drifted ashore, and had been drowned four, five, or six days. (This witness related the startling fact of holding, in one season, inquests on fifteen infants under three months old, found floating in cigar boxes near the city of Albany—cases, doubtless, of infanticide.)

"*Henry C. Allen*, called for the plaintiffs. He testified that he had been coroner of Albany county for twelve or fourteen years. He never could make up his mind as to any definite time that a body would remain under water. He knew an instance of a girl of fourteen years of age, who was drowned on Friday at 12 o'clock, and floated on Sunday at 12 o'clock. She was drowned at Greenbush Ferry. Had known instances of bodies rising in five or six days; sometimes sooner. Knew of one man, by the name of Moreton, who floated on the fourth or fifth day. The girl spoken of had turned a dark livid color. Females float sooner than males.

"*George E. Cutler*, called by plaintiffs. He testified that he was coroner of Jersey City. He knew of the case of a young man who was drowned on Sunday, about 7 or 8 o'clock in the morning, and on Tuesday or Wednesday succeeding, about 11 o'clock, he was found floating about two miles from the place where he was drowned. He

knew of a female by the name of Smith, was seen alive on Wednesday evening, about 7 o'clock; on Wednesday, about 4 o'clock, P. M., he was called to view the body floating. A person of temperate habits will bleach very quick; those who have been inveterate drinkers never will bleach.

"*John Osborn*, called by plaintiffs. He testified that he was coroner of Albany county three years. Had occasion frequently to reclaim drowned bodies. Had known bodies to come up in two days, others not in several months. Had a case of an Irish girl. She had been drowned some two or three days; it might have been four. Had another case of a man, *McCarregan*, an Irish auctioneer, who rose in four or five days.

"*Silas M. Benton*, called for plaintiffs. He testified that he was acting coroner in 1847, 1848, and 1849, in New Haven, Conn. He knew a case of a person, whom he saw on Friday, was missed on Saturday, and found floating in the water on Sunday. The man was a German, and a baker by trade.

"The verdict of the jury was in favor of the plaintiffs."¹

The same question was largely discussed on the trial of Spencer Cowper, for the murder of Sarah Stout.²

§ 526. In two cases mentioned by Dr. Taylor, bodies floated in a much shorter time. In one a woman, who was seen on the banks of a river at half-past eleven in the evening, was found drowned at eight o'clock in the morning. The body was floating on the water with the face downwards. In another, in the month of December, a factory girl fell into a river while walking along the bank in the evening. The body was found floating on the surface of the water the following morning. The bodies in these cases were clothed, and this, it is supposed, may have rendered them more buoyant.³

§ 527. III. *Signs of death by drowning*.—In the enumeration of the evidences of this mode of death, it is assumed that the inspection is made shortly after the act has occurred and before putrefaction has commenced.

The countenance of the drowned is usually described as being natural and composed; the face is pale, but very soon becomes livid

¹ Am. Journ. Med. Sci., July, 1853, p. 263.

² Burke's Trials of the Aristocracy, 284.

³ Med. Jur., 5th ed., p. 696.

and swollen on exposure to the air, and especially in warm weather ; the eyes are half open, and the pupils dilated ; a light froth is observable about the mouth and nostrils, and the swollen and livid tongue reaches to the margin of the lips. These signs are not exclusively characteristic of death by drowning—they merely render the cause of death by suffocation probable.

§ 528. 1st. *Paleness and coldness of the skin and cutis anserina.*—The first are ascribable merely to the presence of the body in a colder medium than the air, and are altogether destitute of significance as to the cause of death. The projection of the papillæ of the skin, commonly called goose-flesh, is deserving of more attention, for although it may have been caused by the coldness of the air, yet it cannot be produced upon a body already dead, by the chill of the water, unless, possibly, the body be thrown in while yet warm. Löffler very justly remarks, upon this sign:¹ “If we should find a body drawn out of the water in the summer time, and the *cutis anserina* on certain parts of the body not covered with the clothing, we should be fully warranted in the conclusion that it was due to the *sensation* of cold, and consequently that the individual was living on entering the water.” A singular case is reported in the second series of Casper’s observations, in which the opinion that a child two and a half years old was living when thrown into water, rested partly upon this circumstance. The *cutis anserina* was very evident upon the right side of the body and upon one of the thighs. The head having been enveloped in a cloth, neither froth was found in the lungs nor water in the stomach. The fluidity of the blood and the *cutis anserina* were, therefore, the only *medical* signs present.

§ 529. 2d. *Abrasion of the hands, mud and sand under the nails, and substances grasped in the hands.*—In the struggles made by a drowning person to save himself, he clutches wildly at every object in the water ; hence, if it is not very deep, and the drowning person is near the bank, the fingers will most probably bear the marks of sand or gravel, and weeds, sticks, etc., will remain firmly grasped in the hands. Unless the substances found in the hands be such as are peculiar to the water, the other marks of injury upon them may have been received in a struggle upon the shore, or in a fall down a precipitous bank. Or, indeed, they may be produced after death by the

¹ Henke’s Zeitsch., 1834, 3 H. p. 6. Der Tod durch Ertrinken.

hands striking against substances at the bottom of the stream. Again, in many instances, these signs are not found at all—a fact which may be explained by the absence of struggling when the person enters the water in a state of unconsciousness from intoxication or other causes. Likewise, if the water be very deep, the body will not have reached the bottom until all its energies are lost and life is extinct.

§ 530. 3d. *Water and froth in the lungs.*—The fact that water is drawn into the lungs by persons who die by drowning, is, as a general fact, perfectly well established. It is found, either in substance, or mixed with air and mucus constituting froth. When found in substance, it may have been imbibed during life or have penetrated after death. If it have entered during life, it must be identical with the medium in which it is presumed the person was drowned, and sometimes it will contain mud, sand or gravel, which has been dissolved or suspended in the water. Dévergie relates a case in which sand and gravel were found in the trachea, and another is reported by Blumhardt,¹ of an epileptic who, having fallen into a shallow brook, was drowned, and on *post-mortem* examination, his trachea was found to contain from three to four drachms of sand and gravel. Metzger² examined the body of a new-born child that was drowned in the drain of a slaughter-house. The whole of the trachea to its bifurcation was filled with the liquid refuse. The presence of water in the lungs is not, however, a proof that it was taken in while the person was living. The fact that water will penetrate the lungs of a dead body, which is submerged, rests mainly upon the authority of Orfila, who made experiments which fully demonstrate its possibility. It is, indeed, true that most other experimenters have not succeeded, but they have made their trials, either with dead animals or with stillborn children. Löffler, however, in his experiments upon puppies, found that if the head were kept in a more or less elevated position, and the jaws separated by a piece of cork, the water readily penetrated after death into the lungs. The observations of Orfila, being upon the dead human body, are more to the purpose. He found that, by placing the body in a bath-tub and coloring the water with lampblack or indigo, the colored water could afterwards be found in the subdivisions of the bronchial tubes. In one case even, in which the body, thirty hours

¹ Wurtemb. Med. Correspond. Bl., iv. No. 1.

² Pyl's Aufsätze St. 6, Fall. 5.

after death, was placed upon its abdomen in the colored water, the water had penetrated as far as the middle of the trachea. Perhaps, as a general rule, water will not be found in the lungs, if the person did not perish by drowning but was thrown in after death, because the head by its weight falls back, and an obstacle is thus placed to the entrance of the water. But, where a body has been thrown into a well, or is otherwise found in a posture favorable to the ingress of the water, the discovery of this fluid in the respiratory passages may with plausibility be assumed to be of post-mortem occurrence.

The absence of water from the lungs is certainly not sufficient evidence that the person was not drowned, because it is not invariably present in cases where the person has undoubtedly perished in this way. Moreover, it may have drained away, especially if such manœuvres have been used to resuscitate the person as by rolling him on the ground or suspending him by the heels. It may also disappear by transudation, when the body remains a long time in the water.

§ 531. *Froth in the lungs* has, on the other hand, greater significance as to the cause of death. Although found to a certain extent in other modes of suffocation, such as hanging and in epilepsy and extensive bronchitis, it does not present in these cases the same distinctive characters by which it may be recognised in death by drowning. In the cases referred to, it is very small in quantity, often bloody, and, being composed entirely of the mucous secretion of the trachea mixed with air, is viscid, in larger bubbles and closely adherent to the sides of the tube. The watery froth of the drowned is on the contrary abundant, foamy, made up of an infinite number of small bubbles which are easily separable, and which soon dissolve on exposure to the air. It often extends from the mouth to the smaller bronchial tubes, but is generally more limited in extent.

The absence of froth from the lungs cannot, however, be assigned as a proof that the person did not die from drowning. Experiments have shown that in certain cases of drowning it is not formed. These are cases in which, from any cause, the person has not risen to the surface to breathe. Piorry, Orfila, and others have shown, that, when animals are completely immersed in water and forcibly held there until dead, no froth is found in their lungs; but if, on the contrary, they are allowed to struggle and come to the surface, it is formed abundantly. Again, from its very nature, this sign is evanescent. If the body have lain for several days in the water, if it have been

removed from the water with the head depending, or, finally, if the inspection be not made soon after its removal, especially if the weather be warm, the froth that may possibly have existed will no longer be found. In Dr. Ogston's observations, the watery froth in the lungs was not found later than fifty-five and a half hours after drowning in summer, and the fourth day in winter. This author states, also, that he met with a case of poisoning with laudanum, in which a light watery froth like that of the drowned was found in the trachea.¹

Hence we may conclude, that the more extensively the froth is found in the respiratory passages, the greater will be the probability of death having taken place by drowning, and of the struggle having been active and prolonged before the extinction of life. Unless there are marks of strangulation upon the body, pathological proof of bronchial catarrh, or evidence that the person has been subject to epilepsy, the sign is positive and conclusive of death by drowning. If, on the other hand, no froth is found, this circumstance is no proof that the person did not die by drowning, unless the inspection was made soon after death, the body having been carefully removed from the water, or unless other injuries sufficient to have caused death were discovered. Even then, it cannot be regarded as conclusive.

§ 532. 4th. *Water in the stomach.*—Water is always swallowed in greater or less quantity, by a drowning person who retains sufficient consciousness to make a struggle for life. It will not, however, always be found, if the inspection have been delayed for a long while, or if the popular means have been employed to restore him to life, by getting rid of the water in the stomach. Furthermore, there are certain cases in which the person falls into the water already asphyxiated, or stunned by a blow or a fall, in which case, consciousness not existing no struggle will be made, and consequently no water was swallowed. When, however, water is found in the stomach, it may have been swallowed immediately before the presumed accident. Casper² relates an interesting case in which a child two years old, playing in the neighborhood of a stream, being thirsty, drank eagerly a large quantity of water given to him by his nurse. She left him for a moment, and on her return, found that he had fallen into the water, and was already drowned. In this case, the usual signs of suffocation were wanting, there was no watery froth in the trachea or bronchia, but

¹ Lond. Med. Gaz., 1851, p. 762.

² Gericht. Leichen öffnungen. Fall. 77.

the blood was remarkably fluid, and the stomach filled with water. Hence it is necessary to observe whether the fluid in the stomach is identical with that in which the person apparently was drowned, for although the result will frequently be a negative one, yet it is often possible to detect sand, gravel, parts of water-plants, etc., in the œsophagus and stomach, which it is highly improbable would have been voluntarily swallowed. If the individual be discovered lying in a morass, a stagnant pool, or a privy well, there will be, of course, no difficulty in recognising the liquids from such places, if found in the stomach.

§ 533. The objection to the evidence from the presence of water in the lungs, that it may have penetrated thither after death, cannot be applied to the sign under discussion. Experiments by Riedell, Champaux and Faisolle, Maschka, Viborg, Kansler, Orfila, and Piorry, on the dead bodies of animals and men, have fully established the certainty, that water does not enter the stomach *after death*, unless putrefaction is far advanced. Hence the conclusion is warranted, that, if the water can be recognised as identical with that in which the individual apparently was drowned (unless it was drunk previous to submersion) he must have swallowed it in his drowning struggles.

§ 534. 5th. *The general signs of death by asphyxia* are found on drowned persons. Contrary to the once prevailing opinion, that apoplexy was the cause of death in drowning, an extravasation of blood in the brain is rarely met with in the drowned. Those who are predisposed to apoplexy, and who suddenly enter cold water, particularly when the stomach is full, may be struck with apoplexy; or those who fall on the head, from a height, into the water, may rupture one of the cerebral vessels, but the reader should bear in mind that this is neither a necessary nor a usual condition in those who simply die from drowning. Even a congestion or fulness of the vessels of the brain is not constantly observed, and the appearances often described as such are most probably cadaveric, and due to the depending position in which the head is generally found.

The amount of congestion of the brain depends usually upon that of the thoracic viscera. The lungs appear fuller and more voluminous than usual, sometimes overlapping each other in the anterior mediastinum, but do not contain much blood.¹ The ecchymoses which

¹ Bock, Gericht. Sectionen., p. 44.

are found beneath the pleura, pericardium, and pericranium, in all cases of suffocation, and in some of strangulation, are never found after death by drowning (Tardieu). M. Faure¹ has called attention to the emphysematous condition of the lungs resulting from the rupture of the pulmonary vesicles and the escape of air mixed with water from them into the intra-vesicular structure, as a distinctive sign of death by drowning, and as being available, therefore, in helping to determine whether a body found in the water was thrown there after death, or is that of a person who died by drowning. Such lungs are remarkable for retaining their natural shape, and for their unusual weight. The heart always contains, in its right half, fluid or loosely coagulated blood, and is distended with it if the lungs are at the same time overloaded.

According to some authors, the blood is always completely fluid, but this statement is liable to exceptions, as coagulated blood has found in some well-authenticated cases of drowning, and also in experiments upon animals which have been killed in this way.² The abdominal organs are usually found much congested, especially the liver and kidneys. If the drowning have taken place during the process of digestion, the stomach, as observed by Orfila, presents a violet color. The bladder sometimes contains urine, at others not; as a sign of drowning, it is of the most complete insignificance. Retraction of the penis is given by Casper as a sign peculiar to death by drowning.

§ 535. 6th. *Marks of violence.*³—The first point to be determined in all cases where marks of violence are discovered upon the bodies of persons found in the water, is, whether the individual was really drowned. This is rendered necessary by the fact that persons are not infrequently thrown into the water dead, or supposed to be dead, after criminal violence has been employed, and it is hoped in this way to conceal the cause of death. Moreover, suicides endeavor sometimes to destroy themselves by drowning, when they have failed by other means. If it can be shown, from an absence of the signs of drowning before enumerated, that the person was probably dead at the time of submersion, it will, of course, not be necessary to consider the possibility of the injuries having been accidentally received at that time.

¹ Arch. Gén., 5ème sér. xii. 301, and xv. 474.

² Taylor, Med. Jur.

³ See *infra*, §§ 832, 835.

The character and extent of the wounds or other injuries will often enable us to determine very nearly at what period they were received. Indeed, it is only by a careful examination of these, and a comparison of them with those which could possibly be made accidentally in drowning, or immediately afterwards, that we can hope to approach to a correct judgment of the case. A person falling from a height into the water may sustain various severe injuries, especially if the water be shallow and he fall upon the head. Fractures and even dislocations have been produced by this means. The first may be caused by sudden, violent contact with some hard body in the water, or at its bottom ; the second is illustrated in the case of a man who for a wager jumped from the parapet of London Bridge, and dislocated both arms, probably in consequence of holding them in a horizontal position. Besides these injuries, various contusions and lacerations may occur in drowning or immediately after it, from accidental violence, sustained by the person in his drowning struggles, his body being possibly thrown against projecting rocks, roots of trees, or sharp pieces of wood or iron. Sometimes a mark, similar to that made in hanging, is found upon the neck of persons who have been accidentally drowned, and caused by the pressure of the collar or fastening of the dress rendered tense by the imbibition of water.

A case is recorded¹ in which the body of an old man, who had voluntarily drowned himself, was drawn out of the water by means of a rope fastened round the neck for the purpose. This was done probably half an hour after death. The thyroid cartilage was broken into several pieces, and there was a distinct ecchymosis over it, made by the rope.

It is the province of the physician to determine whether these injuries could have been produced in this fortuitous manner, but most of the circumstances which throw light upon these doubtful cases come properly under the cognisance of the jury. There are some injuries, on the other hand, which are of such a nature as to indicate that they were inflicted previous to drowning. They are such as cannot be attributed to any cause incidental to drowning, but must have either been self-inflicted or homicidal. They are stabs, gunshot wounds, incised wounds of the neck, etc. In estimating the cause, nature and effect of these injuries, the physician will be governed by the facts referred to in the chapter on Wounds, since evidently the circum-

¹ Henke's Zeitschrift, für 1844, H. i.

stance of subsequent immersion will not materially affect the distinction between homicide and suicide. If, however, the body have lain long in the water, and especially if the process of putrefaction have begun, the information derivable from the marks of violence upon the body will be greatly impaired in value. Not only will the coagula, wherever the water has gained access, be dissolved and washed away, but the size, direction and color of the wound will be altered. The cause of this fact will be fully apparent from a consideration of the structural changes made by the process of decomposition.

§ 536. 7th. *Putrefaction, etc.*¹—A body which is taken out of the water presents a pale and bleached appearance, which is more striking the warmer the temperature of the water. In summer it is observable in a few hours; in winter not until several days after death. After the body has been removed from the water, and while still fresh, the face and head, the neck and the breast as far as the middle of the sternum, acquire one after the other a brick-red appearance. But the putrefactive process very soon begins, and spots of a bluish-green color appear in the midst of this redness, and generally are first evident upon the temples, ears, and nape of the neck, and then on the neck and breast. These spots mingle together, and more rapidly when the body has lain long in the water, so that in summer, after eight to twelve days, and in winter, in twelve to fourteen days, the whole head, neck, and somewhat later the breast also have acquired a livery-green color, with interspaces of dark red. Casper says that it is not unusual to see bodies of the drowned which exhibit this striking putrefactive change, while at the same time, the rest of the body, particularly the abdomen and extremities, retain their pale color. In water of the temperature of 50° to 54° Fahr., the body becomes rigid in a few hours. The skin assumes a yellowish-white color, the lips become blue, and the joints inflexible.

§ 537. After the lapse of from three to ten days, the condition of the body undergoes a marked change. The development of gas becomes so great as to cause the body to float, and in the course of the second week, the skin becomes emphysematous, the cuticle loose, and the parts of the body which are above the surface of the water acquire tints of green, blue, and brown, and become dry and parchment-like. If the body has rolled about in the water, as will be the case where

¹ As to signs of death, see *infra*, §§ 540 *et seq.*; as to identification of dead bodies, see §§ 620 *et seq.*

the current is rapid, these changes take place more gradually. If taken out of the water about this time, the features become in a few hours scarcely recognisable in consequence of the swelling and discolouration, the latter being blackish-green; the whole of the body is swelled and puffy, and the scrotum often distended to the size of a child's head. The penis, on the contrary, is very much shrunken. The internal organs, with the exception of the brain, are comparatively fresh in their appearance. If the body, however, have remained in the water, and the weather be cool, few changes worthy of note take place during the next six or seven weeks. But about the third or fourth month the skin has become so much eroded in various places, but especially over the inguinal region, that perforations will be found leading to the various cavities of the body. In consequence, the gases generated by decomposition escape, and the body sinks again in the water. The skin and the muscular tissue become transformed into incrustations of adipocere, and the bones are so loosely held together, that portions of the skeleton are apt to be separated. The time which a body has lain in the water cannot be determined with any precision, after the process of putrefaction has once commenced. The rapidity and character of the alterations which it undergoes vary according to age, sex, habit of body, temperature of the water and the air, depth of the water, and whether salt or fresh, stagnant or running, the attacks of fish and birds of prey, and finally whether the body is clothed or not.

Hence it may be inferred, from these remarks, how easily, after the body has lain some time in the water, the external features of wounds and other injuries may be masked by the progress of putrefaction and the imbibition of water by the skin.

§ 538. IV. *Accidental or otherwise.*—Infants and the infirm and aged may be accidentally drowned in very shallow water, as may also, indeed, adults who fall into it, the mouth downward, in a fit of epilepsy or helpless from intoxication. A man was in the act of leaving a privy, when he was seized with an epileptic fit and fell with his face in a piece of dirty water, which did not exceed a foot and a half in breadth, with a depth of from three to four inches. When discovered after death, only his mouth and nostrils and one cheek were found to have been under water.¹ Moreover, persons bent on suicide have

¹ Dr. Ogston, Med. Gaz., May 2, 1851. Dr. Taylor, in his critique of the medical evidence in the case of Kirwin (Dublin Quarterly Journal, Jan. 1853).

been known to destroy themselves in this way; a case related by Dr. Smith, in which a woman thrust her head in an opening which she had made in the ice and so perished. Where, however, persons are found drowned in shallow water, the natural presumption will be that they have been forcibly held there by one or more murderers. It is only by the absence of any marks of violence, that we may infer that the act may have been suicidal or accidental.

§ 539. The presence of ligatures upon the hands and feet, and of weights attached to the body, rebuts the presumption of accidental drowning, but does not prove that it was homicidal. In a case which occurred in Paris the body of a man was found in the river, his neck, legs and hands being fastened together by a cord furnished with slip knots. It was proved that he had died by drowning, and had himself secured the cord, to insure a more speedy death.¹ If, however, as is remarked by Mr. Taylor, the limbs bear evidence of violent constriction from the cord, and especially if these marks are found on the forepart of the neck or on *both wrists*, the presumption of murder becomes very strong. In another case, the body of a man was found in the water, with his legs tied together, over the trowsers, below the knee. The right wrist was fastened in a noose, and the free end of the cord, after passing around the body, was loosely tied or wrapped around the left. This latter circumstance, together with the absence of marks of violence, rendered it probable that this also was a case of suicide.²

says: "Persons while bathing, or exposed to the chance of drowning, are often seized with fits which may prove suddenly fatal, although they may allow of a short struggle; the fit may arise from syncope, apoplexy, or epilepsy. Either of the last conditions would, in my opinion, reconcile all the medical circumstances of this remarkable case. It is the result of twenty years' experience in the investigation of these cases, that the resistance which a healthy and vigorous person can offer to the assault of a murderer, intent upon drowning or suffocating him or her, is in general such as to lead to the infliction of a greater amount of violence than is necessary to insure the death of the victim. The absence of any marks of violence or wounds on the body of Mrs Kirwan, excepting such small abrasions as might have resulted from accident, may be taken in support of the only view which, it appears to me can be drawn, namely that the death was not the result of a homicidal drowning or suffocation, but most probably of a fit resulting from natural causes."

¹ Ann. d'Hygiène, 1833, i. 207.

² Casper's Vierteljahrsschrift, 1854, Heft i. p. 167

CHAPTER XII.

SIGNS OF DEATH.¹

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 - 7th. Liver, § 576.
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¹ This chapter is mainly drawn from Dr. Casper's Pract. Hand. Gericht. Med. Berlin, 1857; Liman's ed., Berlin, 1871.

- 11th. Kidneys, § 580.
- 12th. Urinary bladder, § 581.
- 13th. Oesophagus, § 582.
- 14th. Pancreas, § 583.
- 15th. Diaphragm, § 584.
- 16th. Arteries, § 585.
- 17th. Uterus, § 586.

§ 540. I. *Cessation of the respiration and of the circulation*, so that no pulsation or murmur can be discovered even with the aid of a stethoscope.

§ 541. II. *Filmy aspect of the eyes.*¹

¹ M. Bouchut, in *La Tribune Médicale*, No. 47, 1868, gives some signs of death as supplied by ophthalmoscopic examinations.

“ 1. We are able either with the aid of the ophthalmoscope or by means of atropine to distinguish real from apparent death, and thus to guard against the dangers of premature inhumations.

“ 2. If death is but apparent, the cornea is translucent, the papilla of a rose-red color, and the fundus of the eye red and furrowed by the arteries and veins of the retina.

“ 3. After death we may observe with the ophthalmoscope that the transparent cornea is wrinkled, and like in appearance to a piece of moistened window-glass which prevents our seeing clearly the objects behind it.

“ 4. At the very instant of death, the choroid loses its red color, and becomes pale, nacreous, or gray, like tarnished lead.

“ 5. With its change in color after death the choroid acquires a pale tint, similar to that of the papilla, so that the extremity of the optic nerve, being no longer made apparent by the red fundus, becomes almost invisible.

“ 6. Although after death, the papilla of the optic nerve is no longer recognisable by its color, its place may still be indicated by the venous trunks which radiate from it as a common centre.

“ 7. Death causes the central artery of the retina to disappear, by removing from it all the blood it contains.

“ 8. In consequence of death, the veins of the retina are contracted or partly disappear, and the blood arrested in their interior, presents more or less extensive interruptions, which hinder us from following the vessels along the whole of their intra-ocular course.

“ 9. When in a state of apparent death, a solution of atropine placed between the lids always produces at the end of a quarter of an hour a great dilatation of the pupil.

“ 10. When death is real, the solution of atropine produces no effect on the pupil, so that the absence of dilatation of the iris after the application of this agent ought to be considered as a certain sign of death.”—*Half-Yearly Abstract of the Med. Sci.*, 1868, vol. xliii. p. 101.

It is important to bear in mind, however, that in some cases the pupil will

§ 542. III. *Pallor of the body.*—Persons of a very ruddy complexion, however, often retain a high color for some time after death. Red or livid rings around ulcers on the foot, etc., do not disappear. This is also the case with tattoo marks, jaundice, and discolorations produced by a blow received some time previous to death.

§ 543. IV. *Extinction of animal heat.*—This is a gradual process, and the time required to produce it varies with the condition of the body at the time of death, with the manner of death, and with the medium in which the body is kept after death. Fat bodies, for example, retain warmth, *cæteris paribus*, longer than those which are lean. The same is said to be true of the bodies of persons killed by lightning, and it is certainly the case with all such as perish by any kind of suffocation. Very much depends upon the temperature of the medium in which the body is kept. It is well known that a dead body if thrown into water will cool very rapidly, while if thrown into a dung-heap, or the vault of a water-closet, or even if closely covered in a bed, it will cool very slowly. As a general rule, bodies become entirely cold within from eight to twelve hours after death.

Dr. Niderkorn has made some observations of great interest on this subject. (*De la Rigidité Cadavérique chez l'homme*, Paris, 1872.)¹ The following table records the average results of 135 observations of temperature in the axillæ of persons who had died from various diseases:

| Temperature of body after death. | 2 to 4 hours. | 4 to 6 hours. | 6 to 8 hours. | 8 to 12 hours, or more. |
|-------------------------------------|---------------|---------------|---------------|----------------------------|
| Maximum. | 109.4° F. | 98.2° F. | 95.3° F. | 100.4° F. |
| Minimum. | 89.6° F. | 80.6° F. | 70.5° F. | 62.6° F. |
| Average. | 96.9° F. | 90.2° F. | 81.7° F. | 77.9° F. |

respond to atropine and Calabar bean for some hours after death. Borelli found that, "in exceptional cases, effects followed their application as long as twenty-four hours after death. He found the result of their application less marked in cases where death has resulted from old age or marasmus. The period of time that had elapsed after death also influenced the result. A reflection of the myotic action of the Calabar bean from one eye to the other was also noticed, which was never seen in the case of mydriatic action of atropia. This difference Borelli attributes to the fact that the brain, which is the organ of reflex action for the circular fibres of the iris, preserves its vitality longer than the great sympathetic which innervates the radiating fibres."—*Am. Journ. Med. Sci.*, April, 1872. p. 562, from *Edinb. Med. Journ.*, Nov. 1871, and *Giornale d'Oftalmologia Italiano*.

¹ Tidy's Legal Medicine, vol. i., p. 48.

§ 544. V. *Relaxation of the muscles* generally begins immediately after death, and is the earliest symptom of the extinction of the turgor vitalis.

Want of electro-muscular contractility.—Dr. Taylor states that failure of a superficial muscle to respond to galvanic stimulus may be taken as a certain sign of death in a body.¹

§ 545. VI. *The relaxation and sunken state of the cornea* after death is well known. Still more remarkable is the suppleness or pliancy of the eyeball. Up to the last moment of life the eyeball uniformly remains elastic, and resists any pressure of the finger; but within twelve or eighteen hours after death this resistance ceases, and the ball becomes gradually softer and softer, until decomposition takes place.

§ 546. VII. *The flattening of the fleshy parts* upon which the body rests, not only on the back and sides, but also the calf of the legs, on the upper and lower extremities, on the thighs, etc., according to the position of the body at the time of death and subsequently.

§ 547. VIII. *Suggillation*,¹ or livid discoloration, is the result of the settling of the blood in obedience to the law of gravity. Hence it occurs upon the depending parts of the body, as on the back, on the calf of the leg, on the face, on the ears, and on the sides of the breast. It begins to appear within ten or fifteen hours after death, and the spots increase in size until decomposition takes place. As suggillation furnishes in itself satisfactory evidence of the reality of death, we shall notice it further, distinguishing, for the sake of convenience, between external and internal.

§ 548. 1st. *External suggillations, or death spots.*—These deserve careful attention, because they may be easily mistaken by the inexperienced for ecchymoses, or bruises, and consequently for traces of violence inflicted during life. The scalpel, however, furnishes an easy and certain test by which the two may be distinguished. In post-mortem suggillations, an incision, no matter how bold and deep, will never cause liquid or coagulated blood to appear in the wound. At

¹ Med. Jurisprudence. Sixth Am. ed. p. 59.

² This word is now most commonly employed as synonymous with *cadaveric lividity*, to describe those violet-colored spots which form upon the dependent portions of dead bodies by the influence of gravity.—Nysten, *Dict. de Méd.* 11ème éd.

the most, only small specks of blood will be seen arising from the division of small veins of the skin. But wherever there is the least ecchymosis, an incision will be followed by a flow of blood. As this is the only decisive test between these two appearances, which in many respects are so much alike, it should never be omitted by the examining physician.

§ 549. The color of suggillations varies but little between bluish-red, scarlet, and copper-red. They are never raised at all above the level of the skin, as is often the case with ecchymoses. They also assume different shapes—round, oblong, or angular. At first they appear in separate spots, having the size of a walnut, of an apple, of the hand, etc., until they gradually run together and cover large portions of the body—as the half or the whole of the back. These spots are not affected by age, sex, or constitution, and follow upon all kinds of death, not excepting death by hemorrhage. Engel maintains that suggillations may be caused to disappear by making an incision into them, and allowing that part of the body in which they are to lie dependent. But Dr. Casper remarks that, after a great number of experiments, he had never seen one entirely disappear, although they become somewhat smaller and paler.

§ 550. 2d. *Internal suggillation* (hypostatic congestion) appears in several different organs, but chiefly in the lungs, in the brain, the kidneys, and intestines.

§ 551. (1) In the *lungs* it is seen very frequently. It makes its appearance, according to Orfila, within from twenty-four to thirty six hours after death, but there is no doubt that it often arises far earlier than this, at the time that the blood in general begins to settle. In the case of bodies which have remained lying on the back, both lungs at their posterior part, or about a fourth part of the whole parenchyma, will be found of a much darker color than the rest, and, on being laid open, an evident sanguineous engorgement will be seen, even when these organs are anaemic. This is so striking that it may easily mislead the inexperienced, and cause them to attribute the death to apoplexy of the lungs, pneumonia, etc. This is especially apt to be the case where the blood is unusually dark, and where oedema of the lungs had existed.

§ 552. (2) *In the brain*.—It is important to observe that hypostatic congestion often occurs in the brain even in cases of death by bleeding; so that a quantity of blood in the cerebral veins generally, and

especially in the posterior sinuses, is no evidence against this manner of death. Whether, in case this condition do not appear soon after death, it can afterwards be made to appear by changing the position of the body, is doubtful. This common appearance of hypostatic congestion in the brain must not be mistaken for active hyperæmia, as may easily be done by the inexperienced, who are thus led to attribute death to an attack of apoplexy where none existed.

§ 553. (3) *In the kidneys and intestines.*—Hypostatic congestion occurs in the kidneys and other organs of the abdomen. It is especially common in the organs which lie in the pelvis. The bluish-red color which appears on the dependent folds of the intestines may easily be mistaken for disease, whereas it is only a cadaveric phenomenon. The diagnosis, however, is easily made by drawing out the whole mass of intestine, when the arborescent appearance will be seen to occur at regular intervals. When the body has remained resting on the back, the posterior half of the kidneys becomes discolored, and in this way may easily be distinguished from a general hyperæmia in this organ.

§ 554. (4) *The heart.*—Suggillation does not occur in the heart; but as this organ exhibits more than any other the so-called *polypus*, a very important formation as regards medical jurisprudence, it may be conveniently noticed here. These heart polypi are merely coagulated fibrin, and are either clear and white, or colored red by the blood. It is not to be admitted that this coagulation of the blood occurs before death, as an ordinary phenomenon, although in cases of a protracted agony it may take place in this long interval between life and death. As a general rule it takes place after death, and as the body gradually grows cold. Hence, where coagulated blood is found in wounds upon a dead body, it cannot safely be concluded that the wounds were produced before death, upon the ground that "blood cannot coagulate after death." This is one of the many erroneous notions which have remained undetected, from the habit of treating medical jurisprudence in a merely theoretical way. Engel is right when he says, "I do not believe that there is any disease or manner of death after which blood does not coagulate in the dead body. Some special case where it has not occurred may be cited, but many other cases may be adduced where it has occurred after the same disease or manner of death." This coagulation of the blood must follow peculiar laws which are as yet unknown; for it not only takes

place after those kinds of death of which a fluid state of the blood is characteristic—as after different kinds of suffocation—but, what seems quite inexplicable, the coagulation occurs in many organs and vessels sooner than in others, not only in the heart (the right ventricle), but also in the inferior vena cava, the liver, etc. The proposition that “coagulated blood around or in a wound shows reaction during life, because no coagulation of the blood can take place after death,” is, with all its consequences, erroneous.

§ 555. IX. *Cadaveric rigidity*.—This mark of death is well known. It occurs within tolerably wide limits, but commonly between twelve and twenty hours after death, and lasts from one to seven days. After this rigidity passes off the body again becomes as pliant as before. The primary cause of its appearance is unknown. After death from narcotic poisons it does not take place, or, at least, only for a short time. Neither is it observed, according to Casper, in the body of the immature foetus. These two cases constitute, perhaps, the only real exceptions. There is a great difference of opinion as to the longer or shorter continuance of cadaveric rigidity after certain specific diseases. A low temperature of the air and the use of alcohol tend to prolong it. Cases are cited by Dr. Casper, in which he observed it after two, four, six, and eight days. The stiffness of a frozen body may easily be distinguished from cadaveric rigidity. In the former case the whole body is as stiff as a board, while in the latter some suppleness about the joints of the knees and elbows always remains.

§ 556. When cadaveric rigidity comes on immediately after death the period just preceding has generally been one of great physical activity and fatigue. For instance, animals which have been chased for a long time usually stiffen immediately after being killed. Those killed on the battle-field are often found in a state of rigidity in the position they were in at the moment of death. Dr. J. H. Brinton (*American Journal of the Medical Sciences*, January, 1870) relates a number of instances of post-mortem rigidity in soldiers who had been instantaneously killed on the battle-field. His experience shows that this condition may occur after death from gunshot wounds of the head or abdomen, as well as when the wound has been of the chest.

§ 557. Where the above marks are observed it may be concluded that the body is that of a person who has been dead from two to three days.¹

¹ The subject of cadaveric rigidity has been very thoroughly investigated by

§ 558. X. *Putrefaction*.—The rapidity with which the process of decomposition takes place depends partly upon the condition of the body, and partly upon external causes.

Dr. Kussmaul, whose essay upon the subject also presents an epitome of what had previously been written concerning it. (See *Prager Vierteljahrs.* I. 67.) From this it would appear that, whatever may be the cause of death, the phenomenon in question is never totally wanting. It has been observed by Bertelsen and by Ehrman, even in the foetus removed by Cæsarian section from the womb. Yet it may occupy certain portions only of the body. It is usually first in the neck and the muscles of the lower jaw, whence it extends both upwards and downwards. In a limb it can, if complete, be removed by forcible flexion, and if not complete the flexed limb will become rigid again. The period after death at which it begins and that at which it ends are entirely variable. It may commence within an hour, or be delayed for a whole day, and it usually appears latest in the bodies of vigorous and muscular persons. In them, also, it generally lasts longest, and in cold weather may continue for eight or ten days; but when the weather is hot and the body emaciated it may disappear in the course of ten or fifteen hours. Kussmaul lays it down as a law that whatever powerfully depresses the vitality of the muscular fibre favors the speedy supervention of its rigidity. Oxygen, it is stated, being the agent upon which its vital power depends, the more rapidly the influence of this agent is withdrawn the earlier will rigidity occur. We see this condition supervening rapidly in animals which consume a large proportion of oxygen in breathing, as birds, while in those which consume but little air, as the amphibious animals, it is very tardily developed.

It is stated in the text that warmth delays while cold hastens cadaveric rigidity; but such a statement would seem to be applicable only to the extremes of temperature; and hence it matters little in reference to this point whether a body is covered with the bedclothes or is naked, or whether it is exposed to the average temperature of winter or summer. Sommer placed two stillborn infants in a bath at 90°–100° F., immediately after their birth. In from three to four hours rigidity developed itself and reached its maximum in six hours.

The essential cause of cadaveric rigidity is not well known. Brücke, and after him Kühne, have given plausible reasons for supposing it to depend upon the coagulation of the fibro-albuminous fluid which imparts moisture to the organs. (*Prager Vierteljahrs* lxi. 93.) Other explanations have been proposed but none suffice.

It has been shown by Orfila, and more recently by Dr. Ogston (Brit. and For. Med. Rev., April, 1857, p. 303), that under the general title of cadaveric rigidity two conditions have been confounded which are apparently distinct from one another. The one comes on at a variable period after death, and the other, which the former writer terms *spasmodic rigidity*, and the latter *cadaveric spasm*, commences at the latest instant of life, and continues until the muscular tissues have begun to alter under the influence of the putrefactive process. Like ordinary cadaveric rigidity, it differs from tetanic spasmodic rigidity in this, that, as Kussmaul has shown in the form last named, the bent limb when forc-

§ 559. 1st. Fat, soft, lymphatic bodies putrefy, *cæteris paribus*, far sooner than those which are lean, because the quantity of moisture in them favors the work of decomposition. This will account for the fact that the bodies of very aged persons generally decompose, more slowly than those of others.

§ 560. 2d. The bodies of women who die soon after child-birth, from whatever disease, decompose very rapidly. But it is not to be supposed that difference of sex, in itself, affects the process.

§ 561. 3d. It is known that the bodies of newly-born infants decompose, *cæteris paribus*, sooner than other bodies. But it must be observed that in the great majority of cases the bodies of infants judicially examined have been subjected to influences to which other bodies are seldom subjected. In most cases the body has been exposed in the open air naked, or only slightly covered.

§ 562. 4th. The process of decomposition is materially affected by the manner of death.¹ After the sudden death of a person in health the body decomposes much less rapidly than after an exhausting sickness, or a disease which impairs the blood, as typhus or putrid fever, organic dropsy, tubercular disease, etc. The process is also very rapid in the case of bodies which have been much bruised or mangled. Those cases, however, must be excepted in which the body remains protected from the air, as when buried underneath fallen walls, etc. The bodies of persons suffocated by smoke, coal-gas, and sulphuretted hydrogen-gas, decompose very quickly. Decomposition also takes place speedily after death from narcotic poisons. This is not so much the case after death from other poisons, especially after poison by phosphorus. Where a person has been poisoned by sulphuric acid, the process of decomposition is decidedly retarded, probably because the acid hinders the disengagement of ammonia. In the case of persons who have been killed by a stroke of apoplexy, while in a state of drunkenness, the body has been observed to remain sound an un-

bly straightened tends to resume its previous posture, while in both of the other forms the limb retains the position in which it is placed. There are numerous instances in which persons have been found dead in a sitting posture from which they must have fallen but for this cadaveric spasm, and Dr. Ogston relates the case of a man who committed suicide by hanging, and between whose knees a Bible was found, retained solely by the lateral pressure of the closely adducted thighs.

¹ As to questions of identification of corpse, see *infra*, §§ 620 *et seq.*

usual length of time, owing to the well-known anti-putrescent powers of alcohol. Where death is produced by arsenic, decomposition takes place as usual up to a certain point, after which it ceases and mummification begins.

In addition to the above-mentioned influences which affect the process of decomposition, there must be others, as yet unknown to us. As evidence of this fact, Dr. Casper cites a case in which he examined the bodies of fourteen men, all of about the same age, who had followed the same course of life and who had been killed at the same moment by a single cannon-ball. In all of these cases the progress of decomposition was different. The same author cites also the case of a married couple, of nearly the same age, who had been suffocated during the same night by coal-gas. The bodies had been subjected to the same influences up to the time of examination, and yet the back and belly of the man were quite green, the windpipe was brownish-red, etc., while the body of the wife, an uncommonly fat woman, was perfectly sound both without and within.

§ 563. 5th. *Effect of external agents.*—The external agents which affect the process of decomposition are Air, Moisture, and Heat.

(1) Bodies left uncovered in the open air decompose, *ceteris paribus*, far sooner than others. It is not uncommon to find in the case of persons who have been drowned with their clothing on, that part of the leg which is protected by the boot quite sound, when the rest of the body is almost decomposed. Owing to this influence of the atmosphere, the rapidity of decomposition will be affected by the manner in which the body is clothed, by the kind of coffin in which it is inclosed, by the soil in which it is buried, and by the greater or less depth of the grave. It is well known, for instance, that pine coffins will soon decay and leave the inclosed bodies exposed. So, too, bodies interred in shallow graves are less protected from the decomposing effect of the atmosphere, than those which are interred deeper. A stiff, clay soil shuts out the air more effectually than a porous, sandy soil. But this effect of difference of soil may be more than counterbalanced by the presence or absence of another agency, viz., moisture. Clay or turf soils are apt to contain more moisture than sandy soils, and hence promote to a greater extent decomposition.

§ 564. (2) In proportion to the amount of moisture will be the greater or less rapidity of decomposition. Hence bodies which

remain in water, decompose much more quickly than those which are buried in the earth.

§ 565. (3) Although heat of itself has a tendency to dry up the body and thus to check the process of decomposition, yet, when united with the above-mentioned agencies of air and moisture, it promotes the process very greatly. This is seen in the fact, that a body exposed in summer at a temperature of 68° or 78° F., will, in the course of one or two days, be quite unfit for the dissecting-table, while in winter, at a temperature of 14° to 20° F., this will not be the case after ten or twelve days. The same effect of temperature is seen where the body is kept in water. If frozen in ice, it will remain sound a very long, and, indeed, an indefinite time, as is proved by the mammoth found in Siberia, parts of which are still preserved in the University of Moscow. A body kept in water at a temperature of from 35° to 45° often shows, after ten or twelve days, the marks of strangulation, while at a temperature of 70° or 75° these disappear in from five to seven days. It must also be observed, in this connection, that, when the water is deep, the temperature at the bottom differs perceptibly from that at the top, the latter being more affected by the sun. Hence, a body floating on the top of the water will decompose more rapidly than one remaining at the bottom. A body taken out of the water, and exposed to the atmosphere, will undergo decomposition to a greater extent in a single day than it would have done in two or three days, had it remained in water. A higher or lower temperature of the earth quickens or retards decomposition in the same way as a higher or lower temperature of the water.

Dr. Casper estimates the comparative effect upon a dead body of exposure to the air, and of protection in water or in the earth, as follows: "A body, when freely exposed in the open air, will ordinarily undergo as much decomposition in one week or month as it would in two weeks or months if kept in water, or in eight weeks or months if buried in the earth after the usual manner. This, of course, is offered only as a general rule. In each individual case allowance must be made according to the circumstances."

§ 566. 6th. *External signs of decomposition.*—In describing these appearances, bodies which have been exposed, from the time of death, in the open air, may be taken as types.

(1) The first appearance, in order of time, is a greenish color upon

the surface of the belly, accompanied with the smell peculiar to putrefaction. This discoloration arises between twenty-four and seventy-two hours after death, according to the condition of the body and the temperature of the medium in which it is kept.

(2) Within the same period the cornea becomes soft, yielding to the pressure of the finger.

(3) Within from three to five days after death, this green color spreads over all the lower part of the abdomen, including the genital organs, which, in the case of both sexes, assume rather a dirty brownish-green color. In all cases of death from suffocation, bloody, frothy discharges from the nostrils will be observed, mingled with air-bubbles. Green spots of different sizes will now appear also on other parts of the body, as on the back, on the lower extremities, on the neck, and on the sides of the chest.

(4) Between eight and twelve days after death, the whole body presents this green appearance, which has become darker in color and is accompanied with a stronger smell. On some parts, as on the face and neck, the color is a reddish-green, owing to the exudation of blood through the pores of the skin. Gases have now begun to form, and to swell up the body. These are generally inflammable, and a burning jet may be produced by applying a lighted taper to a small opening made in the abdomen. The color of the eyes may still be recognised, but the cornea is concave. The anus stands open. On some parts of the body, especially on the extremities, and on the neck and breast, dirty red streaks will be seen where the skin remains clear. The nails still adhere firmly to the skin.

(5) Between fourteen and twenty days after death, a bright green and reddish-brown color spreads over the entire body. The cuticle is raised in blebs of different sizes, many of them as large as the palm of the hand, and which in some places have burst open. Maggots now appear in great numbers, especially in the folds and orifices of the body. Owing to the continued formation of gases, the chest is dilated, the belly acquires the shape of a large ball, and in fact the cellular tissue of the whole body is enormously distended, so as to assume gigantic proportions. The features are distorted, and the entire physiognomy so changed as to make it impossible even for the nearest relatives to recognise the person. The color of the eyes is no longer discernible, for the distinction between pupil and iris can no longer be seen, and the whole scleroteca has assumed a uniform

dirty red color. In men, the penis is greatly swollen, and the scrotum is as large as a child's head. The nails lie loosened at their roots. At this stage of decomposition the effect of difference of temperature is remarkable. Exposure for ten or twelve days at a temperature of 68° to 78° will produce as great changes in the condition of the body as would take place within twenty or thirty days if exposed at a temperature of from 32° to 50°. The body now swarms with maggots, and where it is left unprotected in the air or in water, may become the prey of numerous other animals, as dogs, cats, foxes, wolves, birds of prey, and land and water rats. Fresh-water fish (German) do not feed upon dead bodies. Where the body has thus served for food the marks will be found upon the breast and belly and on the extremities, the bones of which are often laid bare. The consequent opening of the cavities and the lesions of the soft parts of the body may easily be distinguished, with a little attention, from traumatic injuries. When a body answers to the above description it may be safely concluded to be that of a person who has been dead at least so long as from fourteen to twenty days, not that this is the ultimate limit, for at this stage of decomposition the process is very gradual, several weeks and even months often making little difference in the appearance of the body.

(6) The stage of putrid colliquation arises within from four to six months after death, or, where the body has been kept in a warm and moist medium, earlier than this. Owing to the continued swelling the chest and belly have now burst open, and these cavities lie exposed. The skull has also yielded to the pressure, and the brain has exuded. The orbital cavities are empty. All the soft parts are in a state of dissolution and finally disappear, and entire bones, especially of the skull and of the extremities, are laid bare, and the latter separate from the trunk. No trace of features any longer remains. The breasts of females have disappeared, and of the genital organs nothing indicative of sex remains, unless perhaps the hair or the shape of its growth; for in man it ascends towards the navel, but in woman is confined to the pubis. But even at this stage the presence of a womb may indicate to which sex the dead person belonged.

§ 567. XI. *Saponification. (Adipocere).*—In cases where the body is exposed to the continued action of water, whether by lying in water itself or in very damp soil, the process of putrid decomposition proceeds no further than the stage above described, but is succeeded by

saponification. It is difficult to say exactly how soon this process begins to take place. Dévergie thinks that it requires a year for a body lying in water, and about three years for one lying in the earth, to become entirely saponified, or converted into adipocere. This process cannot reach any great extent in less than half a year where the body remains in water, or in less than a year where it lies in moist earth, although it may begin to appear earlier than this.¹ The appearance is that of a homogeneous, pure or slightly yellowish-white, fatty substance, which is easy to be cut, which melts in flame, and has a smell somewhat like mouldy cheese, but by no means very disagreeable. The muscles first undergo this process, but it finally reaches all the organs of the body, which now become one shapeless mass, whose original appearance is no longer discernible. According to Guntz, the adipocere thus formed has more bulk than all the fat which belonged originally to the body. This fact is important to observe in reference to the weight of the dead bodies of infants.

§ 568. XII. *Mummification*.—This process, in which the body is dried up and assumes a rusty-brown color, is of little interest in connection with medical jurisprudence, since little is known of the influences necessary to produce it, as well as the time required for the process. Mummification occurs as well where the body is exposed in a vault to a drying wind, as where the atmosphere is entirely excluded. It also takes place often in the case of bodies buried beneath the burning sands of the desert. At what time the natural process of mummification begins to show itself where the existing circumstances are favorable, is not determined; we only know that, once perfected, the mummy will last thousands of years. Hence where a body is discovered already mummified, it would be impossible to decide, with any approach to accuracy, how long a time has elapsed since the occurrence of death.

§ 569. XIII. *Decomposition of internal organs, in its several stages*.—The great number of influences which combine to affect these organs, produce a much greater difference in the time of their decomposition than exists in the case of the external organs, and

¹ Casper relates a case where a new-born infant which had been buried in a cellar for a few weeks, was found, when exhumed, to have already undergone partial conversion into adipocere. This author says that he has never seen a whole body completely saponified.—*Forensic Medicine*, vol. i. p. 41. New Sydenham Soc.

hence they furnish marks by which the time of death may be more accurately determined.

§ 570. 1st. The *windpipe* and *larynx* are the first of these organs which exhibit signs of decomposition. On bodies, which still appear quite sound upon the surface, or, at most, show only a few green spots on the under parts, the thin mucous membrane of the *trachea* exhibits a remarkable paleness throughout its whole extent, except when death has been produced by suffocation or *laryngitis*. When the process of decomposition has advanced a little further, so that the whole under part of the body has become green, commonly in from three to five days after death in summer, and in from six to eight in winter, this thin mucous membrane has assumed a uniform dirty-red color, in which no vascular injection can be discovered even with a microscope. This appearance occurs before any marks of decomposition are visible upon other internal organs, and is not influenced by age, constitution, or manner of death. The inexperienced should be careful not to mistake this natural effect of decomposition for capillary injection or the effect of suffocating or of drowning. In the further course of decomposition, the mucous membrane of the windpipe becomes olive-green, the cartilages of the tube separate, until at last the whole organ disappears.

§ 571. 2d. The organ which next, in order of time, yields to decomposition, is the *brain of infants*, not more than a year old. The delicate texture of the organ at this age, and its comparatively slight protection from the atmosphere, render it an easy prey to decomposing influences, so that it will often be found to be quite destroyed when other organs are perfectly sound, and when no discoloration is to be seen, except upon the surface of the body. In decomposing, it changes to a thin, pulpy substance of a rosy-red color, which discharges itself as soon as any opening is made in the skull, and leaves no trace of the several parts of the organ.

§ 572. 3d. The *stomach* decomposes at an early period. The first traces of decomposition are certain irregular, dirty-red spots in the *fundus*; they vary much in size, being sometimes as large as a plate, and often have bluish-red streaks, or veins, running through them. These spots appear first on the posterior surface, where they are partially due to hypostatic congestion, but soon after show themselves on the anterior surface. They are described by some authors as inflammatory, or as evidences of asphyxia by hanging or drowning, but are

really nothing more than the result of early decomposition. In case of doubtful poisoning, it is very important to mark these changes. As the process of decomposition advances, the color changes from a dirty-red to a grayish-black.

§ 573. 4th. The *intestinal canal* follows next in order in the progress of decomposition. The peculiar color produced by bile, owing to the contact of a portion of the intestine with the gall-bladder, cannot be mistaken. In the course of decomposition the intestines assume a dark-brown color, they burst open and discharge their contents, become greasy, and are finally reduced to a dark, shapeless, pulpy substance.

§ 574. 5th. The *spleen*, when not diseased, commonly continues sound longer than the intestines, but belongs to the class of organs which decompose at an early period. It grows softer and softer and is easily crushed, and afterwards assumes a bluish-green color, and become so soft that it may be rubbed down with the knife-handle.

§ 575. 6th. The *omentum* and *mesentery*, if free from fat, may remain sound several weeks after death; but if fatty, not so long. These organs assume a grayish-green color and dry up.

§ 576. 7th. The *liver* in grown persons may remain sound for some weeks after death. In infants it begins to decompose earlier. The first appearance is that of a changeable green color seen first on the convex surface, and which afterwards spreads over the whole organ, and finally changes to a coal-black. The size of the liver is lessened in the same proportion as that of the other organs by the evaporation of its fluid constituents, and the parenchyma become pulpy. The texture of the gall-bladder, however, may be discerned at a later period.

§ 577. 8th. The first trace of decomposition in the *brain* of grown persons is a light-green color, seen first at its base, and which gradually spreads over the whole organ, from without inwards. In a medium temperature the brain softens within two or three weeks, but months may elapse before it changes into that reddish pulpy substance, into which, at so early a period, the brains of infants are converted. Where the brain is exposed by a wound in the skull, decomposition may take place much earlier.

All the above-mentioned organs belong to the class of those which decompose at an early period.

§ 578. 9th. The *heart*. This organ is often found still sound,

although collapsed and quite empty of blood, for weeks after death, and after the decomposition of the liver, intestines, etc., has reached an advanced stage. It becomes soft, first in the columnæ carneæ and then in the walls, and assumes a greenish, then a grayish-green, and, finally, a black color. The small quantity of *liquor pericardii* which the heart contains disappears by evaporation, as the process of decomposition advances, and the pericardium becomes quite dry. This stage of decomposition, however, is not commonly reached until some months after death.

§ 579. 10th. The *lungs* begin to exhibit marks of decomposition about the same time as the heart. They are often found in such a state of preservation that their structure may be readily discerned, after the external portions of the body are far advanced in the process of decomposition. The first appearance upon these organs is that of little bladders, varying in size from a millet seed to a bean, which are occasioned by the formation of gas under the *pleura*. These bladders at first appear singly and on different parts of the lungs, but afterwards they increase to such an extent that they cover large portions of the organ, especially on its under surface. The color of the lungs remains for a while unchanged, but as decomposition advances they become of a dark, bottle-green color, and, finally, entirely black. They now become soft, collapse, and, at last, their characteristic structure is destroyed.

§ 580. 11th. The *kidneys* continue sound longer than the heart and lungs, and will never be found to have reached the putrid state in such bodies as are only half decomposed. These organs become soft, and of a chocolate-brown color, but even at this stage their granular texture may be easily discerned. Afterwards, but long after death, they become greasy, of a blackish-green color, and are easily torn.

§ 581. 12th. The *urinary bladder* yields to decomposing influences still later than those organs which have been mentioned.

§ 582. 13th. The *œsophagus* will often be found tolerably firm, and only of a dirty grayish-green color, some months after death, when the stomach and intestines admit no longer of close examination.

§ 583. 14th. The *pancreas* resists decomposing influences so strongly that a body must be almost entirely putrid in order that the process be observed in this organ.

§ 584. 15th. The *diaphragm*. Green spots appear upon this organ

within the first week after death, but after four or six months its muscular and tendinous structure may be distinguished from each other.

§ 585. 16th. The *arteries* decompose among the last of all the soft organs. Dévergie reports a case where the *aorta* was perfectly discernible fourteen months after death.

§ 586. 17th. According to Dr. Casper, the *uterus* yields to decomposition last of all the internal organs. It is often found lying in its place, tolerably firm, though of a dirty-red color, and in such a state of preservation that it may be cut open and examined, when this would not be possible with any other organ. This statement is applicable even to newly-born female infants.

BOOK IV.

QUESTIONS MORE DISTINCTIVELY LEGAL.

CHAPTER I.

RAPE.

1st. Submission of prosecutrix, § 593.

(a) From artificial stupefaction, § 594.

(b) From ignorance of the nature of the act, § 599.

(c) From mistake of person, § 605.

(d) From fear, § 606.

2d. Prior want of character of prosecutrix, § 607.

3d. Subsequent suppression of the fact by prosecutrix, § 609.

4th. Extent to which coition was carried, § 610.

5th. Want of age of defendant, § 615.

6th. Want of sexual capacity of defendant, § 615.

7th. Proof of seminal stains, § 617.

§ 593. 1st. *Submission of prosecutrix*.—This may happen from either of the following causes:—

§ 594. (a) *From artificial stupefaction*.¹—It makes no matter whether the drug was given for the purpose of producing stupefaction, in order that the rape might be effected on the female thus made unconscious, or whether it was administered for the purpose of causing sexual excitement, and thereby leading to a voluntary submission.² It is rape in either case, supposing the woman to have been made incapable of resistance, the law being, that the overcoming of chastity, and the destroying of resistance by artificial means, is rape, when the offence is consummated. If the result of the dose be stupefaction, and if, on the woman thus become insensible, carnal intercourse be effected, it is rape, though the intention was merely to excite. Thus, where the prosecutrix was made drunk by the prisoner, who then

¹ See the medical relations of this point, *supra*, §§ 213, *et seq.*

² Wh. Cr. L., 8th ed., § 562.

violated her person, it was held in England, where, from the offence being capital, it is kept within its strict common-law limits, that the crime was rape, though the jury expressly found that the liquor was given with intent of *exciting*, not *stupefying*.¹ And in this case it was held, that where the insensibility is the defendant's act, and where the defendant knows that "the act was against the prosecutrix's consent at the last moment she was capable of exercising her will," it is rape. Several of the judges held that the crime was consummated by the mere act of knowingly violating an insensible woman, whether the insensibility was produced by the defendant himself or not.

§ 595. In a case of subsequent date in New York, the indictment charged that the defendants committed a rape upon one Mary A. Williams; also counts for assault with attempt to commit a rape, and for simple assault and battery. The evidence showed that the defendants got the girl intoxicated, and then, it seems, two of them raped her, the others being present at the time. The girl was proved to be a common prostitute. The defendants were found guilty on the second count. The case came before the Supreme Court on exceptions to the judge's charge. In delivering the opinion of the court, Judge Johnson said, "The judge, among other things, charged the jury, that, if they should find, from the evidence, that the girl and the defendants were drinking together voluntarily, and afterwards went out together, without any assignation having been made, or any consent on her part to have sexual intercourse with them, and she became insensible from the liquor thus drank, and while in such condition the defendants violated her person, they would be guilty of rape." "It has, I think, never yet been held that merely having carnal knowledge of a woman while deprived, by voluntary intoxication or otherwise, of all reason and volition, without her consent, and by such force only as was necessary to accomplish the act under such circumstances, was a rape." The point, however, on which the court relied in granting a new trial was, that, in New York, carnal intercourse with an intoxicated woman is by statute an independent offence, and not rape.²

¹ R. v. Camplin, 1 Car. & K. 746; 1 Den. C. C. 89; Wh. Cr. Law, 8th ed., § 562; and see State v. Stoyell, 54 Maine 24; Com. v. Burke, 105 Mass. 376.

² People v. Quin, 50 Barbour 128. In Maschka's Handbuch der Gerichtlichen Medicin 3d vol. (Tübingen 1882) pp. 88 *et seq.*, the subject of unlawful gratification of sexual passion is discussed in its various relations.

But the prevalent opinion is that sexual intercourse with a woman unconscious through anodynes or stimulants is rape, though the unconsciousness was not in any way promoted or induced by the defendant.¹

§ 596. In the prosecution of Dr. Beale, in Philadelphia, in 1854, which has been already noticed,² the law was assumed on both sides to be that carnal intercourse with a woman who was stupefied by chloroform was rape, though the chloroform was administered, at her request, for the purpose of facilitating the extracting a tooth.

§ 597. In January term, 1860, Dr. Davis Green was tried before the Common Pleas of Mercer county, Ohio, for a rape on Jane Gray. According to the statement before us, which was prepared by the defendant's counsel for the Western Law Monthly,³ the prosecutrix was a "truthful, virtuous girl, robust and healthy, of limited education and intelligence, though of good natural sense, aged seventeen years on the 21st of August, 1857." The evidence, according to the same statement, was that "on the night of the 23d of June, 1857, she lodged in bed with a daughter of defendant of about the same age, in the northeast corner room of a village hotel, in Mercer county; that in the adjoining room, south, there lodged a man and his wife, and in the adjoining room, west, with an unfastened door between them, there lodged the defendant, and other persons in other beds; that the prosecutrix and her bed companion retired about 10 P. M., and after talking a short time fell asleep; that during the night, the first thing remembered by the prosecutrix was that the defendant had her by the arms, pulling her out of bed; that he said he was Dr. Green, and he had come to have sexual intercourse with her; that he placed her in a position with her feet touching the floor, and her weight partially resting on them and on the pillows; that in that position he had complete sexual intercourse with her; that she experienced the pain of rupture of the hymen, but experienced upon her clitoris a pleasurable sensation from the coition; that the act lasted but a few minutes; that upon leaving her the defendant said to her she must never tell it, that it would not hurt her; that he held his hand upon her mouth, and she felt a rag between his hand and her mouth; that she heard what was said, was conscious of all that

¹ Com. v. Burke, 105 Mass. 376.

² See *supra*, § 245. As to liability of dentists, see *infra*, § 1092, B.

³ April 1860, p. 183.

occurred; that she tried to speak, but felt so weak and scared that she could not, or would not speak aloud, and did not say but a word or two—said, ‘Go away, oh dear!’ that she tried to force him away, but could not; that she experienced a ringing sensation in the head, felt weak, drowsy or sleepy, but did not sleep any more that night; that she remained in bed until morning, made no outcry, and told no one of the occurrence until about the last of December, 1857; that next morning she felt unwell, and presented a sad and gloomy countenance, and for a week or two was nervous and easily alarmed; that the ringing in the head lasted a day or two; for three or four days she could not sit up for any considerable time; the symptoms of the weakness lasted two weeks; that this time, 23d June, was the usual period for the return of the menstrual discharge, and symptoms of it were felt, but no actual discharge had yet occurred; that on the morning of the 24th she observed a spot, as of blood, on her chemise, the only night dress she wore, which she supposed was a slight menstrual discharge, but that no discharge followed at any time thereafter; that she conceived and gave birth to a child on the 26th March, 1858; that after retiring to her room on the 23d June, before going to bed, her nose bled; that she never saw chloroform before, but smelled it on trial, and believe the smell to be like that she experienced on night of 23d June; that she first thought defendant had intercourse with her twice that night, and told others so, but, on reflection, was sure it was only once; that she saw him with shirt and drawers on, but had no other clothing; that she made an effort twice with both hands to resist him, but could do nothing; she weighed 130 pounds; was in good health, and had always enjoyed good health; did not smell medicine when first awoke, but did after defendant left her room, in about six minutes; the effect was unpleasant, cannot say painful; that her mind was clear from the time she awoke, and she knew everything; her feet were about six inches; more than half her weight on her feet, the rest thrown back on the upper part of the bed; the rail of the bed came in contact with the middle of her thighs; she made no effort to awaken the daughter of defendant, though her hand was near or touching hers; did not halloo nor call anybody; her hands were not restrained at any time; defendant only touched her with one of his hands; is sure she remembers everything that occurred accurately.”

The defendant was a physician. A large amount of evidence was

offered to prove or disprove the offence. The defendant's daughter, a highly intelligent young lady, testified that she was not disturbed, perceived no odor of medicine in the room, and noticed nothing unusual in the appearance of prosecutrix the next morning. The defendant was just recovering from a long and severe attack of phlegmonous erysipelas. The left hand very sore; poulticed: the neck very stiff and sore, and the right hand also sore and in ulcers. No one about the house heard any noise or disturbance during the night, after parties had retired. The partitions between the rooms were of boards; had stood twenty years; had shrunk so that there were cracks between them nearly an inch in width. The boards were an inch in thickness. The bed of ordinary size.

It was also testified, as we learn from the judge's notes, that the defendant, before retiring to bed, took a vial from his pill-bags, which he said contained a weak solution of chloroform; that he bathed the court-plaster on his hand with it, saying that it relieved pain; that he took this vial up to bed with him, saying that he might need it in the night, if his hand became painful; that when he retired he asked which room the girls were in, and selected a bed near the door of their room, saying that he could be near the girls and could wake them early; that he rose before them next morning, and they were called to breakfast by other persons.

He offered no evidence as to his character. He is a married man, age over forty years.

§ 598. A witness swore (without objection) that he once, under the influence of chloroform, had a tooth which the surgeon endeavored to pull, but it broke off, when an effort was made to extract the root with a screw; that he saw, heard, and knew all, but his volition was overcome—had no inclination to resist.

The court (LAWRENCE, J.), in charging the jury, adopted substantially the views in the text. The defendant was convicted, and a motion for a new trial refused. But to this decision the same objection applies as that heretofore urged to the conviction in *Com. v. Beale*, *i. e.*, that it is unsafe to convict when the sole proof of the *corpus delicti* rests on the evidence of a witness who, at the time of the alleged act, was under the influence of a stimulant which it is admitted is apt to work erotic imaginations. In the case immediately before us, it is true, there was subsequent pregnancy, which was not shown in *Com. v. Beale*. But in neither case was there any medical ex-

amination showing sexual intercourse to have been at the time consummated; and in the present case, there was no complaint made by the prosecutrix until months after the alleged rape, at a time when she found herself pregnant. Testimony of witnesses as to what took place when they were under the influence of chloroform, should be subjected to the same tests as those applied to insane witnesses. Such testimony cannot be safely excluded.¹ But there should be always in such cases proof of the *corpus delicti aliunde*.²

¹ See vol. i. § 242.

² From the judge's charge we extract the following:—

"When the *will* acquiesces in *coition*, there cannot, as a general rule, be any rape. But the acquiescence which defeats a prosecution for rape is that of a will so far under the enlightened guidance and control of the other faculties, that the mind can fairly comprehend the nature, and judge of the consequences of the act, unless, as before stated, the defect of capacity is unknown to the accused. (The judge, in a previous part of the charge, had said, that, if the prosecutrix had the capacity to understand the nature and judge of the consequences of sexual intercourse, and the power to resist it by act or word, and neither such capacity nor power was overcome by force, fear, or chloroform, her acquiescence in the act would defeat a prosecution for rape.) If the faculties have been, to some extent, suspended by chloroform, but enough remain to reasonably comprehend the nature, and judge of the consequences, of the act, their acquiescence in coition will defeat a prosecution for rape.

"But if, through the influence of chloroform, either directly upon the *will* or the *consciousness* or other *faculties* of the mind or the *sexual feelings* and emotions, the mental capacity is so benumbed, suspended, or perverted as to be unable reasonably to comprehend the nature and judge of the consequences of coition, and by reason of such condition, known to the defendant, the act is acquiesced in or consented to, such acquiescence or consent will not alone defeat a prosecution for rape. Rape may exist with such acquiescence, thus knowingly obtained.

"It is of the utmost importance that you should ascertain whether chloroform was administered; and if so, whether it deprived the prosecutrix of mental and physical powers.

"If it be assumed (and whether it be, is for the jury to say) that there is evidence tending to show that chloroform was administered to the prosecutrix while asleep; that sexual intercourse was had with her; that she partially or wholly awoke before it commenced; that she was conscious of it, and all the movements attending it; that she could and did hear and understand words spoken in a low tone; that the intercourse produced upon her clitoris a pleasurable sensation; that this was preceded by the pain of a ruptured hymen; that she did not speak; that she felt a desire to resist physically, endeavored to do so, but could not; that the act was followed by pregnancy, and the birth of a child in 276 days; that she was a vigorous girl, in her seventeenth year,

§ 599. (b) *From ignorance of the nature of the act.*—A striking instance of this is to be found in the case of the imbecile girl already

virtuous, truthful, of limited education and intelligence ; that the act was at the proper time for the return of the menstrual period, but before any actual discharge ; it will be important to ascertain whether there is any stage in the effect of chloroform upon the human system where these facts can exist consistently with the idea that such intercourse could be had without her consent.

“ The inquiry may be assisted by ascertaining whether the various powers of the mind and body fade away under the influence of chloroform, gradually and coequally, and return in like manner, as the influence passes off; or whether some—and if so, what ones—precede others in thus fading away and being restored, and the order thereof, in all the various stages of the influence ; and whether some—and if so, what—faculties are retained, and the extent and capacity of them.

“ In the case which I have assumed, where the sense of hearing remained and the sensations of pain and pleasure were felt in a greater or less degree, these facts would tend to show that the stage or condition of *anæsthesia* had either not been reached, or was passed ; and if so, it might be much more probable that memory would retain its power than if the facts were otherwise. And if the capacity to remember existed, statements made by its aid might be reliable. But as failure to resist by *word* and *act*, having the capacity to do so, would be strong if not sufficient evidence of acquiescence in the *coition*, it would at once become necessary to determine if the faculties of *hearing* and *feeling* could coexist in a sound body, without either the capacity to speak or make forcible resistance. If that be not possible, then due weight should be given to such consideration, in determining whether she acquiesced in the coition. But if the capacity to hear, feel, and remember be consistent with incapacity to speak or forcibly resist, then the evidence of guilt may thereby be enhanced. What may be the truth, you will determine from the evidence in the case.

“ But if the prosecutrix had the capacity to hear, feel, and remember, and a capacity to speak and forcibly resist, but the inclination to do so was lost, the will overcome by the action of chloroform, either operating upon the *will* faculty, or the *judgment* and *reflective* faculties (or sexual emotions), so that the mind was thereby incapable of fairly comprehending the nature and consequences of sexual intercourse, and the defendant, knowing these facts, had unlawful carnal knowledge of her, forcibly, that would be a rape. And it would in such case be wholly immaterial whether the entire mind was disordered and overthrown, or only such faculties thereof as are rendered incapable of having just conceptions, and drawing therefrom correct conclusions, in relation to the alleged rape.

“ Whether the physical or mental capacities I have named could operate normally while other faculties of the mind—as the *judgment*, the *understanding*, the *reflective* and *reasoning* faculties—were so deranged or overthrown as to destroy the capacity to comprehend the nature and consequences of

mentioned, who had no notion of what the sexual act consisted, and who was unable to account for her pregnancy, except by the statement that her cousin had played with her on the sofa.¹

coition, is a question of fact for the jury to determine, upon all the evidence in the case.

"But if the prosecutrix had the capacity to hear, feel, remember, speak, and to resist, or in any event, it should not be presumed her will was overcome, without proof of that fact beyond a reasonable doubt.

"If chloroform may produce *delusion* in the mind of its subject in any one of its stages, you will inquire if it existed in this case; whether its existence is consistent with the other mental and physical phenomena which you may find to have existed; and you will give due effect to your conclusions on this subject.

"With these principles as to what are necessary to constitute a rape, the jury will proceed to inquire into the prominent points of controversy, and ascertain if it is proved that the defendant forcibly had unlawful knowledge of Jane Gray; and if so, was it against her will?"

(The judge then read to the jury section 212 of 3 Greenl. Ev., and section 468 of Wharton and Stillé's Med. Jur., and called the attention of the jury to the prominent points of evidence relied upon to prove and disprove the fact of sexual intercourse, and upon the subject of acquiescence.)

On this subject see criticism in Wh. Cr. Law, 8th ed., § 562, where some recent cases are noticed.

The defendant was convicted, and a motion for a new trial refused. The result has been commented on in the text. Of the fact there stated, that under certain stimulants erotic imaginations are engendered, the following illustration may be given, from the Providence Journal, of August 13, 1872:—

"A very singular and remarkable case of hallucination induced by the use of a cosmetic, has lately occurred in Methuen. A young woman living in that town went to Lawrence on Saturday evening last, and on her return to her home, late at night, reported that she had been cruelly assaulted by three men, about twenty rods from her father's house, and that she was left insensible and badly hurt. Physicians have examined the case, and find that several days ago this girl purchased a bottle of preparation kept at the apothecaries', known as 'Soule's Infallible Moth, Tan, and Freckle Eradicator.' This preparation she used for four days, applying it externally upon her face and profusely upon her forehead. On Thursday, the fifth day after commencing its use, she was taken with sickness at the stomach and a feeling of general debility of the entire system. She was obliged to leave her work at the mill and go home, and remained quite ill from this time till Saturday evening, at the time of this occurrence. The physicians say no such assault has been made as she alleges, and they are of the opinion that the girl was laboring under an hallucination, which might have been caused from the use of this preparation, as one prominent ingredient of it is corrosive sublimate, which is a poison, and its application upon the brain externally would have a tendency to produce a sort of insanity."

¹ *Supra*, § 248.

§ 600. It is no defence, therefore, that the party ravished gave consent, or even aided in the commission of the offence, when from her very tender years she is to be presumed incapable of knowing the nature of the act.¹

From the same reasoning it results that it is a rape to have carnal intercourse with an idiotic, imbecile, or insane woman, even though without dissent, she being incapable of intelligent submission.²

§ 601. In England the rule is, there must be some evidence that the act was without the consent of the woman, even where she is an idiot. In such a case, where there were no appearances of force having been used to the woman, and the only evidence of the connection was the prisoner's own admission, coupled with the statement that it was done with her consent, it was held, that there was no evidence for the jury.³

In a prior case the prisoner was convicted of a rape upon the prosecutrix, who was an apparent idiot. She proved the act done, and said that it was wrong, but that she said nothing to the prisoner, and that she did not do anything to him, and that she did not like to hurt nobody. The constable told the prisoner that he was charged with committing a rape upon the prosecutrix, and against her will. The prisoner, in answer to this statement, said, "Yes, I did; and I'm very sorry for it." It was held that there was evidence to sustain the conviction.⁴

But subsequent English cases are to the effect that while, if there is actual incapacity to assent, and force is used, the offence is rape,⁵ there must be some evidence to disprove assent, and, if there be not, a conviction should not be sustained.⁶

§ 602. Somewhat in the same sense the law is expressed by the Supreme Court of Michigan. Rape at the common law or under the statute of Michigan, it was held, is not committed upon the person of a woman over ten years of age, when neither force nor fraud is

¹ Wh. Cr. L., 8th ed., § 558; *Hays v. People*, 1 Hill, N. Y. R. 351.

² Wh. Cr. L., 8th ed., § 560; *State v. Tarr*, 28 Iowa 397. See *Com. v. Burke*, 105 Mass. 276. *State v. Crow*, 10 West. L. J. 501.

³ *R. v. Fletcher*, L. R., 1 C. C. 39; 12 Jur., N. S. 535; 35 L. J. M. C. 172; 14 L. T. N. S. 573.

⁴ *R. v. Pressy*, 17 L. T. N. S. 295; 16 W. R. 142; 10 Cox C. C. 635.

⁵ *R. v. Fletcher*, Bell C. C. 63; 8 Cox C. C.

⁶ *R. v. Fletcher*, L. R., 1 C. C. 39 *ut supra*, cited.

employed to effect carnal knowledge. Where, therefore, a man had criminal connection with a woman of mature age, of good size and strength, but who was shown by the testimony to be in a state of dementia—not idiotic, but approaching towards it and capable of giving an apparent assent; and it appeared that no fraud or force was used by him, this was held not to constitute a rape.¹

§ 603. But suppose the woman was mentally sound, and an adult, but submitted from ignorance as to the sexual character of the act?

In England, this point received a judicial decision on the trial of a physician, who had sexual connection with a young girl who made no resistance, solely from a belief that the defendant was, as he represented, treating her medically. All the judges held the case was rape.² And it was said in another case, where the patient was directed to lean forward, for the purpose of receiving an injection, and where sexual intercourse was then attempted, that the defendant was guilty of an assault.³ But if the defendant had reason to believe that the woman assented, a prosecution for rape cannot, in such case, be sustained. To rape, an intention to use force is essential; and an intention to use force cannot be inferred where there was belief in assent.

§ 604. In a more recent case in New York, the prisoner was indicted for a rape upon Lucy S. Jones, and was convicted in the court below. The facts of the case are sufficiently stated in the opinion of the court, which was given by Gilbert, J. “The plaintiff in error is a physician. The prosecutrix is a single woman, thirty years of age. The commission of the offence rests upon her testimony alone. Her evidence, briefly stated, is, that the plaintiff in error, while attending her in a professional capacity, told her that she had a disease of the womb, and that a physical examination was necessary; that she submitted with much reluctance; that he had carnal connection with her on two occasions, while professing to be making such examination; that this occurred in the parlor of her brother’s house, while the wife of her brother was in an adjoining room; that she made no outcry.”

¹ *Croswell v. People*, 13 Mich. 427.

² *R. v. Case*, 19 L. J. M. C. 174; 1 Den. C. C. 580; 4 Cox C. C. 220; Wh. Cr. Law, 8th ed. §§ 559; *R. v. Flattery*, 13 Cox C. C. 388; L. R., 2 Q. B. D. 410, is to the same effect.

³ *R. v. Stanton*, 1 Car. & Kir. 415.

"No one, we think, would seriously contend that such a statement, made by a female of mature age, and possessing any intellectual capacity, ought to be allowed to become the basis of judicial action." The court below charged the jury that, in a case like this, "the force used in ordinary sexual intercourse is sufficient to constitute a rape." In the Supreme Court this was held to be error.¹

§ 605. (c) *From mistake of person.*—A conviction of rape was sustained in New York by an eminent judge—Thompson, C. J.—upon evidence showing that the prosecutrix mistook the defendant for her husband, and permitted his embraces, under that impression.² The same point was again ruled in subsequent cases; one in New York,³ and another Connecticut.⁴ In England it was at first thought that such evidence would not sustain a conviction;⁵ though afterwards, convictions of the assault with intent, were ordered.⁶ It was then ruled that non-resistance to connection, permitted under a misapprehension induced by the conduct of the man, by a woman conscious and capable of consenting, amounts to consent, though unintentional, and prevents the offence amounting to a rape.⁷

In conformity with this principle, where the evidence was that a woman, with her baby in her arms, was lying in bed between sleeping and waking, and her husband was asleep beside her, and she was completely awakened by a man having connection with her, and pushing the baby aside, and almost directly as she was completely awakened she found that the man was not her husband, and awoke her husband; it was held, that a conviction for a rape upon these facts could not be sustained.⁸ The same view has been taken in Virginia, North Carolina, Tennessee and Alabama.⁹

In 1878, however, a conviction of rape was sustained by the Eng-

¹ *Walter v. People*, 50 Barbour 145. This decision is severely criticized by Dr. Storer, in *Journal of Psych. Med.*, ii., pp. 49–506. Unquestionably the conduct of the defendant was highly reprehensible. But if he had reason to infer consent on the part of the woman, the case was not rape; nor should there have been a conviction, if the jury did not hold beyond reasonable doubt that no consent was given.

² 1 *Wheel. C. C.* 381.

⁸ *People v. Metcalf*, 1 *Wheel. C. C.* 378.

⁴ *State v. Shepherd*, 7 Conn. 54.

⁵ *R. v. Jackson*, R. & R. 487.

⁶ *R. v. Saunders*, 3 *C. & P.* 265; *R. v. Williams*, *Id.*, 286.

⁷ *R. v. Barrow*, 38 *L. J. M. C.* 20; *L. R.*, 1 *C. C.* 156; 19 *L. T.*, N. S. 293; 11 *Cox C. C.* 191.

⁸ *Ibid.*

⁹ See cases cited in *Wh. Cr. L.*, 8th ed., § 561.

lish Court of Criminal Appeal, where the act was committed with a married woman, she not consenting, or giving the defendant any reason to believe she consented, the connection having been found by the jury to be against her will.¹

§ 606. (d) *From fear.*—The crime (except in the cases just noticed) cannot be considered as consummated, unless the prosecutrix resisted as much as she could. Submission, however, caused by terror, the offender knowing it to be such, is no defence.² And where a father has established a kind of reign of terror in his family, and his daughter, under the influence of dread and terror, remains passive while he has connection with her, he may be found guilty of rape.³ But to constitute rape the act must be without the woman's consent. Any consent, no matter how reluctant, is fatal to the case of the prosecutrix.⁴

§ 607. 2d. *Prior want of character of prosecutrix.*—While it is no defence that the woman was a common strumpet, or even that she was the defendant's mistress, the question of prior chastity has been frequently held relevant by the courts. Thus it has been decided, that it is competent for the defendant to show that the prosecutrix's previous character for chastity was bad;⁵ though the prevalent opinion is that the prosecutrix cannot be compelled to answer as to particular acts of unchastity except those committed with the defendant.⁶ But, even in England, a wider range has been encouraged, it having been held admissible to ask the prosecutrix "whether she was not, on the Friday last, walking on the high-street to look out for men," and upon her denying this, to call witnesses to contradict her.⁷ And it has been in some states ruled that the prosecutrix may be asked whether she

¹ R. v. Young, 38 L. J. N. S. 540; 14 Cox C. C. 114; cited in full in Wh. Cr. L., 8th ed., § 561.

² Wh. C. L., 8th ed., § 557; R. v. Rudland, 4 F. & F. 495; R. v. Jones, 4 L. T., N. S. 154; R. v. Wright, 4 F. & F. 967.

³ R. v. Jones, 4 L. T. N. S. 154; L. R., 2 C. C. 10.

⁴ R. v. Hallett, 9 C. & P. 748; Dan Moran v. People, 25 Mich. 356; State v. Burgdorff, 53 Mo. 63; People v. Bunson, 5 Cal. 221; Whittaker v. State, 50 Wis. 518.

⁵ See Pratt v. State, 19 Ohio St. 277.

⁶ R. v. Hodgson, R. & R. 2; R. v. Clarke, 2 Stark. 243; R. v. Barker, 3 C. & P. 589; R. v. Martin, 6 C. & P. 562. See People v. Abbott, 19 Wend. 192; Campo v. State, 3 Kelley 417. Whart. Cr. L., 8th ed., § 568.

⁷ R. v. Barker, 3 C. & P. 589; R. v. Robins, 2 M. & R. 512.

had not had previous connection with other men ; and that, in such case, she is not privileged from answering.¹

§ 608. The *object* of such testimony is twofold : 1st, in making the fact of *coercion* less likely, and, 2d, in diminishing the witness's weight as respects credibility generally. It is less likely that a strumpet, or one holding herself out as submitting to illicit intercourse, though on special inducements or occasions alone, would resist to the extremity which a prosecution for rape requires, than would a chaste woman. Intent to use force, also, is essential to rape, yet whether there such an intention is to be inferred depends largely on the character of the woman. And although, under ordinary circumstances, it is inadmissible to impeach *veracity* by attacking *chastity*, yet, in such an issue as the present, this has been held to be proper. Such being the case, it will be seen that medical testimony as to the prosecutrix's prior condition is of peculiar value. Evidence of any prior venereal complaints, or of any other facts tending to prove previous illicit intercourse, it is always admissible, under such circumstances, to receive.

§ 609. 3d. *Subsequent suppression of the fact by prosecutrix*.—It is here that the presence or absence of a medical examination tells most forcibly. The omission of the friends of the injured party to obtain an early medical inspection may be their misfortune, arising from ignorance or false shame ; but it is better that they should suffer from it, in the acquittal of the offender, than that encouragement should be given to prosecutions in which, while satisfactory evidence of the *corpus delicti*, if it existed, could have been produced, such evidence was withheld. It is not, of course, pretended that the *want* of immediate medical inspection is a legal *bar*.² This it is not ; for no matter how suspicious the omission may be, it is for the court to leave the whole question of the reality of the alleged rape to the jury alone. But it is maintained that it is a salutary rule of policy, of which juries should be advised, in no case to sustain a prosecution for rape unless the prosecutrix's evidence is corroborated, wherever this is practicable, by the testimony of experienced persons, med-

¹ *People v. Abbott*, 19 Wend. 192 ; *State v. Reed*, 39 Vt. 417 ; *State v. Murray*, 63 N. C. 31 ; *State v. Forshner*, 43 N. H. 89. *Contra. McCombe v. State*, 8 Ohio St. 643 ; *Com. v. Regan*, 105 Mass. 593. See *Pratt v. State*, 19 Ohio St. 277 ; and see discussion in *Wh. Cr. L.* 8th ed., § 568.

² See *Lewis v. Com.*, Sup. Ct. Va. 1881

ical or otherwise, who were called in to inspect her person as soon after the occurrence as the circumstances of the case would allow. And such is the general rule, it being held at common law that where medical testimony could be had, but is not obtained and produced, there is not sufficient proof of violence to constitute the offence.¹ In some states it is provided by statute that convictions of rape cannot be rested on the uncorroborated testimony of the prosecutrix.² When a physician attends the injured party, he should be called as a witness for the prosecution.³

The nature and character of the testimony so to be obtained have been already discussed. Under this head it is enough to say that in all cases the results of, as well as the fact of, an examination are admissible evidence. It is admissible, also, for the prosecutrix to prove that she made a complaint, though she cannot put in evidence what were the particulars of her statement.⁴

§ 610. 4th. *Extent to which coition was carried.*—The English law, as to the extent to which the act must have been consummated, has undergone much fluctuation. Thus it was at first held that *emission* must be proved. Great difficulty was thus produced, which was obviated by the statute of 9 Geo. IV., c. 31, which dispensed with proof of emission. Then the question arose as to the *degree* to which penetration must be shown to have taken place. In Ireland, it was said by Lord Carlton, C. J., in 1800,⁵ that it was enough if the prosecutrix swore to “carnal knowledge of her person.” But in England it has always been held that the entrance of the private parts of the man within the private parts of the woman, is an essential condition which must be specifically proved.⁶ In 1832, in a case before Mr. Baron Gurney, that learned judge said, that, “if the hymen is not ruptured, there is not a sufficient penetration to constitute the offence.”⁷ In 1839, however, Chief Justice Tindal declared the only question for the jury to be, whether the private parts of the man did or did not enter into the person of the woman; and that, therefore, though it

¹ R. v. Gammon, 5 C. & P. 321. See *supra*, § 267.

² Wh. Cr. L., 8th ed., § 565.

³ Donaldson v. Com., 14 Norris (Pa.) 21.

⁴ Whart. Cr. L., 8th ed., § 566. See Lacy v. State, 45 Ala. 80.

⁵ R. v. Lidwell, 1 McNally's Evid. 606.

⁶ R. z. Russen, 1 East P. C. 438, 439.

⁷ R. v. Gammon, 5 C. & P. 321.

appear from the evidence, beyond all possibility of doubt, that the party was disturbed immediately after penetration, and before the completion of his purpose, yet he must be found guilty of having committed the complete offence of rape.¹ In the same year a boy named John Jordan was indicted for carnally knowing a girl under ten years; and, there being no evidence of a rupture of the hymen, it was insisted by the prisoner's counsel, on the authority of Gammon's case, just cited, that the offence had not been completed. The defendant was acquitted on other grounds; but Mr. Justice Williams told the jury, "I am of opinion, as matter of law, that it is not essential that the hymen should be ruptured. In the case of *Rex v. Gammon* it was proved that the hymen was ruptured, and the point was, therefore, not necessary to the decision of that case. I also think that it is impossible to lay down any express rule as to what constitutes penetration. All I can say is, that the parts of the male must be inserted in those of the female, but I cannot suggest any rule as to the extent."²

§ 611. Shortly previous to this, though not reported until afterwards, was a trial before Mr. Justice Bosanquet, in which Mr. Justice Coleridge and Mr. Justice Coltman concurred with that learned judge in saying that it "is not necessary, in order to complete the offence, that the hymen should be ruptured; but that, where that which is so very near the entrance has not been ruptured, it is very difficult to come to the conclusion that there has been penetration so as to sustain a charge of rape." In consequence of this charge, the defendant was acquitted of the rape, and convicted of the assault, although there was evidence from the surgeon who attended the injured party that her private parts internally were very much inflamed, but that, in consequence, he could not tell whether the hymen was ruptured or not.³ In 1841, however, the question was put to rest by a case which

¹ *R. v. Allen*, 9 C. & P. 31. In Maschka's *Handbuch der Gerichtlichen Medicin*, 3d vol. (Tübingen, 1882) p. 137, it is maintained that it is unlikely that one man could, under ordinary circumstances, succeed in completing a rape on a grown woman in possession of her faculties, and in no way precluded from resisting his attacks to the end. It is otherwise however when the woman is much below, and the man is much above the average of strength and endurance.

² *R. v. Jordan*, 9 C. & P. 118.

³ *R. v. McRue*, 8 C. & P. 641.

came before the twelve judges, in which the early decision of *R. v. Russen* was finally reviewed and sustained. The prisoner was charged with having feloniously ravished Mary Ann Wesley; and it was very clearly proved by her—she being a girl between eleven and twelve years of age—as well as by a woman who detected the prisoner in the act, that carnal intercourse had been attempted. With respect to penetration, a surgeon was called, who deposed to the appearances in and about the child's private parts, and stated his belief that penetration had taken place, but that the hymen, which in the prosecutrix was placed at the usual distance from the opening, had not been ruptured. The jury returned a verdict of guilty, finding "that there had been penetration, but that the penetration had not proceeded to the rupture of the hymen." On this finding the prisoner was sentenced, and the judgment sustained by all the judges.¹ In accordance with this result, in a case tried in 1844, where the surgeon deposed that "the hymen of the child was not ruptured, but that upon the hymen was a venereal sore, which must have arisen from actual contact with the virile member of a man." Mr. Baron Parke left it to the jury to say "whether, at any time, any part of the virile member of the man was within the labia of the pudendum of the prosecutrix; for if ever it was (no matter how little), that will be sufficient to constitute a penetration, and the jury ought to convict the prisoner of the complete offence." The verdict was, not guilty.² That the rupturing of the hymen is not a condition is illustrated by the fact that cases of first confinements are not unusual in which the hymen is unruptured until the period of delivery.

§ 612. In this country, the rule thus laid down—that there must be *some* entrance proved of the male within the female organ, but that neither rupture of the hymen nor emission need be proved—has been generally followed.³ Perhaps the furthest limit to which it has reached is in a remarkable case in Philadelphia, where, though there was no medical examination, it was held that proof by the prosecutrix of pain in the sexual organ, and of the juxtaposition at the time of the defendant's face to her own—she at the time being in a dentist's

¹ *R. v. Hughes*, 8 C. & P. 752

² *R. v. Lines*, 1 C. & K. 393.

³ *State v. Leblanc*, 3 Brevard 339; *Penns. v. Sullivan*, Add. 143; *Stroud v. Com.*, 11 S. & R. 177; *Com. v. Thomas*, 1 Virg. Cases 307. See for other cases *Wh. Cr. L.*, 8th ed., § 555.

chair, under the influence of ether—was enough to justify a jury in presuming that there was penetration, and that the penetration was sexual. The general result of both medical and legal opinion, however, is, that, while the learned and able judge who tried the case properly left it to the jury as a question of fact, as he was obliged to do, to determine whether penetration had taken place, the verdict was not sustained by the evidence, and forms an unsafe precedent for the future.¹

In North Carolina, it was decided in 1860 that emission was necessary.² By the act of February 29, 1861, it was provided that “proof of penetration only” should establish the offence. Under this act it was held in 1871, that the slightest penetration, without rupture of the hymen, was enough.³

§ 613. In Ohio, in 1867, in a case of rape on a child seven years old, a physician testified that he found marks of violence and evidence of disease, but he had no means of determining whether the disease was *gonorrhœa* or *vaginitis*, the evidences of both diseases being indistinguishable. He then was permitted by the court to express his *opinion* to the jury that the disease was *gonorrhœa*, his opinion being founded mainly on the fact that he found evidences of that disease on the person charged with the rape. It was held by the Supreme Court that the expression of this opinion under such circumstances ought not to have been permitted.⁴

§ 614. Penetration may be inferred by circumstances, and may not be specially *eo nomine* proved.⁵

¹ Com. *v.* Beale, Phil., 1854. See criticism in Wh. Cr. L., 8th ed., § 555, and see *ante*, §§ 245 *et seq.* 266.

² State *v.* Gray, 8 Jones 180.

³ State *v.* Hargrave, 65 N. Car. 467.

⁴ Moore *v.* State, 17 Ohio St. 521. In Cook *v.* State, 24 N. J. L. 843, it was held that it was inadmissible for a physician to prove that rape could not have been committed in a particular way, though in People *v.* Clark, 33 Mich. 112, a hypothetical question as to the practicability of sexual intercourse in a buggy was allowed. In Noonan *v.* State, Sup. Ct. Wis., May 1882, it was held error to allow a medical witness who had examined the prosecutrix and found her sexual organs much inflamed, to give an opinion that such inflammation was produced by sexual connection by a violent, not a free connection. In State *v.* Malley, New Haven, June 1882, medical experts were permitted to testify that the sexual organs of a woman found dead in the water showed marks of violence.

⁵ Brauer *v.* State, 25 Wisc. 413. See R. *v.* Lines, 1 C. & K. 393; State *v.* Tarr, 28 Iowa 397.

§ 615. 5th. *Want of age of defendant*.—At common law, an infant *under* fourteen is to be presumed incapable of committing a rape, though he may be convicted of an assault with an intent to ravish.¹ *Over* fourteen, this question resolves itself into the ordinary one of capacity.

§ 616. 6th. *Want of sexual capacity of defendant*.—This is purely a medical question, which has been examined under another head.²

§ 617. 7th. *Proof of seminal stains*.—A seminal stain is stiff and colorless, though in transmitted light it has a more grayish-brown hue than gum or albumen, for which it might otherwise be at first mistaken. When warmed it assumes a pale yellow hue. The chemical tests, we are told by Dr. Tidy,³ are rendered practically worthless if the garment on which the stains occur be dirty or colored. And we are further advised that we should in no case be justified in pronouncing a stain to be seminal unless the results of the microscopic examinations are conclusive. “By microscope, however, animalcules may be discovered in semen for several hours after emission.” The human spermatozoa has a flattened and almost oval head, with a long, slender filamentous tail. The entire length varies, according to Mr. Curling, from the $\frac{1}{50}$ th to the $\frac{1}{60}$ th of an inch. “The tail is usually five or six times the length of the head, which is about $\frac{1}{500}$ th of an inch in diameter, and may roughly be regarded as about one-third the size of a human red corpuscle. In fresh semen, and very frequently in semen for some hours after emission, as well as that taken from a body some time after death, the vibratile, undulatory movements of the animalcules, principally executed with the tail, betoken life. A case is on record in which active spermatozoa were found in the mucus taken from the vagina of a little girl fourteen days after she had been raped. But even after the spermatozoa are dead and the stain dry, they may be easily distinguished by their peculiar shape. We have more than once seen them in stains six months old, whilst some have asserted that they are able to discover them after five and six years.”

The hairs, in cases of alleged sexual connection, about the genitals,

¹ *Infra*, § 210, as to the conflicting opinions on the rebuttability of this presumption, see Wh. Cr. L. 8th ed., § 551.

² *Supra*, § 201. In Maschka’s *Handbuch der Gerichtlichen Medicin*, 3d vol. Tübingen 1882), pp. 3 *et seq.*; the subject of impotency is discussed at large.

³ Tidy’s *Leg. Med.* (1883) 235.

may exhibit spermatozoa, "which cling to them with remarkable tenacity, even to resisting ordinary washing, unless performed before the seminal secretion has had time to dry. In such case those hairs should be selected for examination which appear stiffened and massed together."¹

CHAPTER II.

LEGAL CASES OF IDENTITY.

- 1st. Questions of doubtful identity, § 620.
2d. Means of identification—Skeleton, § 627.

- Stature, § 629.
- Teeth, § 630.
- Dress, § 633.
- Voice, § 634.
- Marks and scars, § 635.
- Tattooing, § 639.
- Inference of continuity, § 660.
- Inspection, § 666.
- Pictures and photographs, § 670.
- Extrinsic tests, § 671.
- Question one of weight of evidence, § 674.
- Sex, § 675.
- Fractures and deformities of dead body, § 676.
- Cicatrices, § 678.
- Hair, § 681.
- Test determining period since death, § 682.
- Heat producing decomposition, § 683.
- Air having same effect, § 686.
- Water having same effect, § 687.
- Soil, § 688.
- Other conditions, § 689.
- Different organs affected differently, § 692.
- Putrefaction of foetus, § 697.
- Influence of lime, § 698.

§ 620. 1st. *Cases of doubtful identity.*²—Many curious cases of doubtful or disputed identity might be cited to illustrate the singular

¹ Tidy Leg. Med. (1883), 196.

² The legal relations of identity are hereafter independently discussed, Wh. Cr. Ev., §§ 13, 802 *et seq.*

§ 621] IDENTIFICATION OF THE LIVING OR DEAD. [BOOK IV.

lar fortuitous resemblance between individuals, not only in their general personal appearance, but also in accidental marks. Other cases might also be related, in which long absence and various circumstances have so changed a person, that his nearest relatives have not been able to recognise him. Usually, in cases of disputed identity, whether of the dead or living, a scar, a deformity, or some congenital or indelible mark, as *nævus maternus*, or mother's mark, a mole, a tattooing, etc., has proved the only means of recognition.

Salomé Muller sued for her liberty before the courts of Louisiana, alleging that she was a white woman, and had come over from Germany with her parents, at the age of three years. Since that time she had been held in slavery. She was recognised by her resemblance to her family, and further identified by the existence of two small *nævi materni* upon the inside of each thigh, which were correctly described by the midwife who assisted at her birth, and the woman who took care of her upon the Atlantic passage, after the death of her mother.

§ 621. Martin Guerre had been absent from home about eight years, when a person, afterwards proved to be Arnaud du Tilh, appeared in Guerre's home, representing himself to be Guerre. The claimant, according to the evidence collected by the Parliament of Toulouse, in 1560, was accepted by Guerre's family as the party whom he claimed to be, and lived with Guerre's wife three years, and had two children by her. About this time some circumstances occurred to cause suspicions in regard to the true character of the supposed husband, when he was arrested and brought before the criminal judge of Rieux to answer to a charge of fraud. Upon his examination, he answered satisfactorily the most minute inquiries in relation to the former life of Martin Guerre. Some one hundred and fifty witnesses were examined during the investigation, of whom between thirty and forty testified, from a lifelong acquaintance, that the prisoner was Martin Guerre, while about the same number swore positively that he was Arnaud du Tilh, whom they well knew; and over sixty, who knew them both, declared that they were unable to say which the prisoner was. The prisoner, however, was condemned to death, when an appeal was taken to the Parliament of Toulouse. Here the difficulty

¹ Beck, vol. ii. p. 664, from the Monthly Law Reporter, Boston, 1845, Wh. Cr. Ev., 8th ed., §§ 892 *et seq.*; and see article in Albany Law Journal for Sept. 28, 1872, p. 239.

continued ; a large number of witnesses testifying to the identity of Guerre and the prisoner, and an equal number denying it. Among the former were *the four sisters of Martin Guerre*. Finally, however, Martin Guerre himself appeared, and then the relatives were requested to say which was the real *Martin*, when they were both together. Immediately the sisters distinguished and recognised their brother. No doubt now remaining as to the guilt of the prisoner, he was condemned, and afterwards executed.

§ 622. Usually, medical testimony can hardly be required respecting the identity of the living. In disputed cases, it may become necessary for the physician to give his opinion respecting the permanence of scars, tattoo marks, and congenital or acquired deformities. But more frequently he is called upon to assist in the identification of the dead, or to state after how long a period of time and under what circumstances such identification is possible. Krügelstein says that he assisted at the inquest upon the body of a man found dead in a morass. The body was recognised by a number of persons present, as well as by the wife of the deceased, who, however, remarked that her husband when he had left her wore a different jacket from the one on the body. Some time afterwards, however, the man who was supposed to have been dead came home again, and upon investigation it was finally discovered that the deceased was a person belonging to a neighbouring village, who had left his home at an early age and upon his return was recognised by no one. The likeness between the two men, it is stated, was most extraordinary.² Dr. Kinlock, of Drumoak, Aberdeenshire, relates a case of mistaken identity under extraordinary circumstances. The body of a man between sixty and seventy years of age, was found slightly imbedded in sand, on the bank of a river ; both eyes had been picked out by hooded crows, but decomposition had made no progress. The left ear and the first finger of the left hand were wanting, having the appearance of having been lost in early life. The body was conveyed to a suitable place, and persons were requested by advertisements to come and identify it. After some time, two young women claimed it as the body of their father, who, they stated, was a lawyer ; that he was in the habit of leaving home for two or three weeks at a time, without informing them where he went, and that he had lost the left

¹ Henke's Zeitschrift, 1850, 4 H.

ear and the first finger of his left hand. They apparently recognised the clothes and the body, and gave vent to expressions of grief on the event. Subsequent doubts in the mind of one sister were overruled by the confident affirmations of the other. The funeral took place accordingly, and was attended by the daughters and friends of the supposed deceased lawyer. Returning from the funeral, the boatman of the ferry which they had to cross asked them for whom they were in mourning, and, upon receiving their answer, laughingly informed them that he had, only half an hour before, ferried their father over alive and well, and directed them where they would find him. This, to their great joy, proved true. Whose was the body they had buried in the church yard at Drumoak remained undiscovered.¹

¹ Ed. Monthly Journ., Feb. 1854. The following curious case occurred in Boston : It was said that, upon the testimony of the captain of a vessel and six of his crew, a man named James Guard had been arrested by the police on the charge of attempting to rob a vessel, but was afterwards released on its appearing that he could not be the man, as on the night of the robbery he was safely slumbering in the watchhouse of the North End, whither he had repaired for lodging. It was also stated, that on Monday night a body was found in the water at the end of Commercial Wharf, which an officer of the north station testified before a coroner's jury was the body of the unfortunate James Guard, who but a night previous, had been so falsely charged with crime, but who, nevertheless, appeared to have rather suddenly come to a tragic end.

The coroner's jury had no doubt, from the testimony of the officer, that the body was really that of James Guard, and they returned a verdict in accordance thereto, stating that "James Guard came to his death by accidental drowning." Thus the matter was deemed and considered to be settled, when—so runs the report—last night, as the aforesaid officer sat meditating in his office, at the station house, upon matters connected, no doubt, with the city's welfare, the door slowly opened, and what appeared to be the body of James Guard entered. In these days, a police officer is not apt to be a believer in ghosts, but, for a moment, thoughts of that character flitted through his brain. A request for lodgings, uttered in no ghostly tones, awakened him to a sense of reality, and an explanation ensued, when it appeared that James Guard, who had been once charged with robbery, and on the oath of a coroner's jury with having been picked up drowned, was in reality alive and kicking, with sufficient love of the things of this world to receive with gratitude the gift of a soup ticket, presented to him by the penitent police officer. Thus the body now lying in the dead-house is not that of James Guard, but of some one who so closely resembled him as to have been mistaken for him by a dozen persons. It is probably fortunate for the living, that this "Dromio," who might have continued to work mischief for him, has really deceased. It is certainly, a strong case of personal resemblance. (Boston Law Reporter, vol. viii., No. 1, page 55, etc.) As to Boorn's case, see *infra*.

§ 623. The Tichborne case is well worthy of study in this connection.¹ A roving impostor—to take the adverse view—named Orton, *alias Castro, alias Doolan*, so arranged to personate a baronet of the United Kingdom, and the heir to a large entailed estate, that he—Orton, *alias Castro, alias Doolan*—was sworn to be Sir Roger Tichborne by eighty-five witnesses, comprising Sir Roger's mother, “the family solicitor, one baronet, six magistrates, one general, three colonels, one major, two captains, thirty-two non-commissioned officers and privates in the army, four clergymen, seven tenants of the Tichborne estates, and seventeen servants of the family.” The claimant's case, however, broke down on cross-examination. It was proved that he was ignorant of the mother tongue (French) of the genuine Sir Roger, and of the town in which the latter passed the first sixteen years of his life; that he was ignorant of the rudiments of the knowledge which it was shown that Sir Roger possessed; and that he exhibited in exuberance traits mental, moral and physical, which it was impossible that Sir Roger should have acquired. It was said that it was in the power of the defence, had its case been opened, to have proved that certain tattoo marks which existed on Sir Roger were wanting on the claimant; though this proof would have been by no means conclusive, since such tattoo marks, as has been already noticed, may vanish with time. On the other hand, the claimant gave proof of a fish-hook wound on the eye; of a mark of bleeding on the ankle; and of a peculiar scar on the head, which a hairdresser swore he had seen on Sir Roger's. It is important to keep these in mind as showing how deceptive this kind of testimony may be.²

¹ This case is discussed in Wh. Cr. Ev., §§ 378, 459, 558, 803, 804, 807. See also Wh. Cr. L., 8th ed., § 1271.

² The following is from the Spectator of March 9th, 1872:

“In all this gigantic Tichborne case, with its long array of counsel on each side, its endless lists of witnesses, and its revelation of modern jurymen, who almost justify Mr. Bright's dictum that we might get a House of Commons by taking the first six hundred men who pass under Temple Bar, no single figure is so interesting as that of the claimant himself. Take what view we like of him, accept any hypothesis we may of his career, and he must be a personage nearly unique in the annals either of misfortune or of crime. On the former theory, he has lost much more than his position, or estates, or even his liberty; he has lost his own identity. There is no hypothesis on which it is possible to assume even for a minute that he is Sir Roger Tichborne except this—that a man thrown into new circumstances, oppressed by unaccustomed labor, and debauched by dissolute living, may in twelve years so deteriorate in body, mind,

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§ 624. On a less conspicuous theatre than the Tichborne case, though not unlike it in some prominent characteristics, is the following:—

and habit of thought as to be virtually a new and lower man, may forget utterly three-fourths of all he has ever known, including that kind of knowledge which once acquired becomes instinctive, such as the knowledge frequently retained by fatuous persons of the moves at chess: may become utterly reckless in statement—that does happen to a large proportion of opium-eaters—may lose all those habits, ways, and instincts of caste which, if once evident in any human being, are supposed to be indelible, and which certainly often so enter into the fibre of the nature as to be transmitted like physical qualities. There must be possibilities in all human beings of lesions of brain coexisting with great mental acuteness, of defects of memory side by side with great retentiveness, such as physiologists have never recorded among their marvellous tales, of changes, indeed, such as are hardly consistent with continuous identity. We do not even yet reject that hypothesis as a possibility, though we should have done so had we been jurymen, for we do not yet know the limits of the possible, and a speculative thinker is free where a juryman is bound, but there is no other on which the theory of the suit can even as an intellectual argument be sustained. Sir Roger Tichborne, supposing that he appeared in that box and made those answers, must be a man as isolated in his mind as his misfortunes, the subject of some unknown mental disease, the victim of some form of aphasia which affects much more than the memory, which spreads over the whole mind, instead of its mechanical instrument the memory, and fearfully injures the entire morale. We need scarcely say this is no more our view than it was that of the jury or the judge, yet it is difficult absolutely to exclude it—impossible not to consider for a moment what the inner Sir Roger—imprisoned in that huge form, conscious of an identity he has lost the faculties to prove, conscious of unbearable injustice, yet with the untouched shrewd side of his mind aware that the injustice is not wilful, but is one of the thousand results of his misfortune—must now be feeling, or, if feeling has been dimmed by some lethargy of spirit, corresponding to the growth of fat upon his body, must be feeling as if he felt.

“And if we accept the other hypothesis, that the man is no member of the Tichborne family, a mere imposter who has gulled the credulous, wasted months of legal time, and sworn not to one but to a thousand perjuries, what a unique figure he remains, how widely different from the one any foreigner would previously have imagined! The strongest point in his favor is his extreme unlikeness to the sort of man a clever rogue would have picked out to be agent in such a fraud. He if decently competent would have hunted the world for a great actor, a wicked Garrick, the precise character which is certainly not that of this claimant. He has strong qualities rather than high capacities. That he is a determined man is clear from his whole bearing in the witness-box under the attorney-general’s fire of denunciation and at the time of his arrest; that he is a remorseless one is sufficiently proved by the attack on Mrs. Radcliffe—an

"In 1821, an action was instituted by Mary McCreth against William Dickinson, administrator to the estate of Captain Talbot, who, as

attack the wickedness of which does not depend on his identity ; and that he is an able one is the first of Sir J. Coleridge's many points. But what a strange, imperfect, shot-silk kind of ability it must be ! Grant for a moment Sir J. Coleridge's apparent theory of the origin of the affair, that a man named Orton or Castro, bred a butcher, had thought or had been persuaded that if accepted by Lady Tichborne as her son he would without trouble be admitted heir to the family estates, and had gradually conceived a more elaborate scheme, still the fact remains that he must be either the man he claims to be, or have got up his case slowly, piecemeal, and amidst enormous difficulties, as acutely as Sir J. Coleridge himself, who, indeed, in the earlier part of the long trial, wanted to 'change brains with him,' and hinted that he was cross-examining his questioner, extracting safe answers from the very questions themselves. This uncultivated, fat, hard-drinking butcher, must have had twice the legal though latent capacity of the sharp little ferret who created such amusement in the witness-box ; must have had a nearly cloudless memory ; must have divined whole classes of questions to which he would be subjected ; must have had a mind sensitive as that of an artist, to enable him to evade so many pitfalls without ever showing his fear. And he must have possessed that mind in spite of the temperament so rarely found associated with it, a temperament essentially lethargic, apathetic, slow of impulse, and habituated to lazy enjoyment. The claimant remained for years as cool and impassive as the Emperor Napoleon. No doubt he may have been greatly helped, but personation is the most difficult of tasks, and he must have picked up and retained many thousands of isolated facts and circumstances almost as difficult to learn as isolated words in a language you never heard. And, yet, as we said, on the theory of the defence, how incomplete his mind was, how very little it became educated in the five years for which the claim has been maintained ! He could and did learn enough to convince a few men of all ranks, positions, and degrees of culture, and induce them to lend him money, to take in the majority of the populace, and to leave after his examination-in-chief an impression of doubt even on experienced counsel ; but he never, supposing him not to be a deteriorated Sir Roger, caught the whole of any lesson—never, for instance, learned French—an unsolved puzzle, for he had plenty of time, and had been able during his lifetime to acquire some Spanish—never learnt how English gentlemen write letters, never realized fully to himself as a great actor might have done what Roger Tichborne must have been, never to all appearance rose to the conception that his life-work was to carry the deception through, never even got hold of a clear conception as to the kind of knowledge in which he would like to be wanting. His case was no doubt a hopeless one, for the grand obstacle to personation, the impossibility of knowing all that the double must have known, existed to a much fuller extent than the public at first suspected. Garrick playing the part would have been saved by instinctive morale from the frightful artistic blunder about Mrs. Radcliffe, but Garrick could not have provided for the tattooing evi-

was alleged by him, was an Englishman. Mrs. McCreth, however, averred that Talbot was her brother, and an Irishman, and that, as dence. We have only, however, to think of the impression Grrick, or say Mr. Alfred Wigan, would have created with his French, and his air, and his readiness in acquiring knowledge, and with the plaintiff's materials, to see how greatly this claimant fell short in the powers necessary for his part. The result must have been the same, but if Mr. Wigan had been the Pretender half England would have believed him to his dying day. It undoubtedly wished to believe him. Whether the case enlisted the sympathies of the poor against the rich, whether this fat, impassive, bad man realized the popular ideal of a baronet—as we half fancy he did—or whether the story awoke that capacity for wonder always so great in uneducated mankind, it is an undoubted fact that, until the attorney-general rose, a majority of the lower classes were on the claimant's side, and that the speech, with its long-drawn length, and artistic repetitions, and bursts of artificial but effective indignation, did what no amount of evidence given piecemeal would have done. Indeed, not the least astonishing fact in the character of the claimant, as revealed by himself, and without reference to his identity, is the interest and, so to speak, sympathy it excited in men who, nevertheless, were perfectly aware that it was, on his own showing, radically bad. Out of his position he would not have attracted them, but in it they felt towards him as they would to a horse in a race or a dog in a fight, and pardoned the viciousness for the pluck, the cleverness, and above all, the temper be displayed. Is it because Englishmen are so bad tempered that in any conspicuous person, be it the Emperor Napoleon, or Mr. Disraeli, or the claimant in the Tichborne case, impassiveness seems to them so marvellous a quality?"

[For an extract from the charge of Cockburn, C. J., see Wh. Cr. Ev., § 804.]

Mr. Sergeant Ballantine, who was counsel for the claimant on the ejectment trial, gives the following in his "Experiences of a Barrister's Life."

"The solicitor originally retained for him was a gentleman named Holmes, who certainly believed in him, but before he took any steps in the case desired that he should be seen by the mother of Sir Roger, to which the claimant readily consented, and an interview took place in an hotel in Paris where he was staying. It was alleged that he was ill, and when Lady Tichborne saw him he was in bed. It was said that he practiced means to prevent her having an opportunity of judging of his identity; this, however, was denied, and undoubtedly she acknowledged him as her lost son.

"I may now say a few words of the impression he made upon me when first I saw him. He was stout and unwieldy, with marked but not coarse features, although his size would at first create such an impression, but his hands and feet were certainly not what I should have expected to find upon a low-bred person. The expression of his face was not bad, and, I should have said, was of a melancholy cast. His manners were not those of a person who had ever moved in good society,

"What was a noticeable point was that a great likeness wss discoverable in him to many members of the Tichborne family.

his only relative, she was entitled to his estate. On the part of the claimant, the evidence by writing and parol was exceedingly strong.

"When I was first consulted upon the matter by Mr. Holmes, I felt that the disturbance of a family in an estate that they had held unchallenged for so many years was so grave a matter that I ought not to act in it without satisfying myself, as far as it was possible for me to do, that there was reasonable ground for the claim, and, before moving in it, requested an interview with Lady Tichborne, which was accorded without hesitation. I had been informed that she had always clung to the idea that her son was alive, and I had also heard that for some family reason her feelings were somewhat antagonistic to members of her husband's family. She called upon me at my chambers, and I had an interview with her without the presence of any one but ourselves, and certainly with no favorable bias in my own mind. Lady Tichborne was a very quiet, lady-like personage, dressed plainly in black. She seemed to have endured suffering, and to be more aged than her years would warrant. She certainly did not exhibit any animosity to her kinsfolk, but expressed herself most earnestly upon the subject of the claimant. She treated the notion of her being mistaken as to his identity as being absurd, spoke of marks upon his person which she had remembered noticing in his infancy—I did not ascertain whether she had actually seen them since—and she ended our interview by the following words, which I remember well: 'How can a mother be mistaken in her son?' However the belief may be accounted for, I am confident that the lady was truthful, and fully alive to the gravity of her declaration.

"I accepted a retainer with Mr. Hannen on the part of the plaintiff, and although neither of us was unappreciative of the many improbabilities that attended the claim, I believe that both considered it was one that the claimant had a right to bring forward, and possessed many circumstances to uphold it.

"Proceedings were commenced in the Court of Chancery; affidavits were filed; experienced counsel, practicing in those courts, appeared for the respective parties, and the case was begun; and, having briefly sketched the position of the claimant, I propose to show what weapons the representatives of Sir Roger Tichborne's family possessed to encounter the attack.

"In the first place, they were entitled, and did, as a matter of fact, file affidavits, and in them might have given—and ought, in my opinion, to have done—any information they possessed bearing upon the facts. Some five or six years afterward they alleged for the first time that the real Sir Roger had indelible tattoo marks upon one of his arms, of which they were aware when first he made his claim, but nothing was then said in the affidavits on this subject.

"They had the power of subjecting the claimant to cross-examination—peculiarly important in such a case if skilfully exercised—and they availed themselves of it. They believed the claimant to be an impostor, and if so, they must have known that he was a most daring one, and ready to adopt every means to defeat discovery. Still, much may be done by an advocate who knows how to deal with human nature, and has practiced his powers largely and with signal success. Such a man was one of the counsel they had retained—none abler at

Mrs. Lee, one of her witnesses, swore to an acquaintance with the captain for fourteen years before his death, during all which time he

that time at the bar—Mr. Hawkins. I believe, from the effect afterward produced by Sir John Coleridge, that, even with the scanty materials supplied, Mr. Hawkins would have crushed the case at its very outset if it had been false; but instead of using this power the advisers of the family availed themselves of the talents of a chancery barrister of high character and reputation, but who probably had little previous experience of cross-examination under such unusual circumstances; and they never could have supplied him with sufficient knowledge of the alleged marks, or undoubtedly, in my opinion, he would have asked the question of the witness whether he had any such upon his arm, and the witness could not have done otherwise than answer in the negative. There were, according to their account subsequently, two witnesses (at least) of good position who were ready at that very time to come forward and say that they had actually themselves tattooed him at the college.

"The only reason that I have heard given for this mode of conducting the case was that the claimant might have created the marks if he had been informed of their existence. This is nonsense; such an attempt must have been discovered, and would have wrecked the case. If he had been asked the question in the way that Hawkins would have put it, and attempted to shuffle, he would have been simply told to hold out his arm, and the non-existence of any such marks would have been destructive to the trial.

"Assuming that this fact was really known, and that it had been proved, I have no hesitation in expressing my belief that neither the solicitor nor counsel concerned for the claimant would have consented to go on with the case. I am confident that it would have more than shaken the belief of his warmest supporters, and unlike those discrepancies which were abundantly proved at the trial, there would have been something palpable for common minds to grasp; and I believe this monster trial, with the gigantic bill of costs, would have perished at its birth in the Court of Chancery.

"In one of those holes situated at Westminster, and in which during my professional career many legal tournaments have taken place, commenced the great encounter between Tichborne and Lushington, such being the name by which the case was designated. Sir William Bovill, the Lord Chief Justice of the Common Pleas, presided. I led for the plaintiff, and with me were associated Mr. Hardinge Giffard, Mr. Jeune, Mr. W. B. Rose and Mr. Pollard. For the defendants, the Solicitor-General (Sir John Coleridge), Sir George Honyman, Q. C., Mr. Hawkins, Q. C., Mr. Chapman Barber and Mr. Charles Bowen. Mr. H. Matthews, M. P., and Mr. Purcell were counsel for the trustees of the Tichborne estate.

"The court did not present so gay an aspect as the Old Bailey upon one of the gala days of that establishment; the bright robes of the aldermen were sadly missed, and, whatever may have been the wishes of some of the visitors no chance existed of the principal performer ending his days in company with the Ordinary and executioner; but brilliant representatives of rank and fashion

lived in the same house with her. He spoke only of one sister; said her name was McCreth, and she lived in London; that she was so

crowded around the throne of justice which Sir William filled with no dissatisfied air. He did not then anticipate the labors that would be cast upon his shoulders. The first act opened with a terrific combat between him and certain jurymen, and legal weapons of unusual severity were used. A colonel in the Queen's Body Guard appealed to be permitted to attend upon her Majesty's sacred person, but his lordship, fully capable of representing the feelings of this august personage, assured him that she greatly preferred the administration of the law to any protection that he could afford to herself. At last, however, all difficulties were conquered, although the sacred twelve were not reached, and the trial commenced with only eleven victims.

"Of the Lord Chief Justice one would not wish to say an unkind word. No one could doubt his impartiality, and his thorough good nature rendered him very popular. He had been a successful advocate, and had a fair knowledge of law, but wanted dignity, and scarcely possessed grasp enough to deal with such a case. Occasionally he accepted advice from a bevy of ladies who clustered around him, and took a great interest in the proceedings. This certainly was not upon law, but in French and geography, in which it was early shown that he had not been thoroughly grounded. I fear that I must say that, notwithstanding his intended fairness, the color of his mind was evidently adverse to the plaintiff. Those who are not lawyers ought to be made aware that the burden of proof lay upon the claimant, and that unless I, on his behalf, succeeded in making a case of such inherent probability as to require an answer, the defendants would succeed in the action. A thoroughly strong judge, if he feels that counsel for the plaintiff has not succeeded in doing so, will often convey a view to that effect. And if, after this case had proceeded through part of the claimant's cross-examination, a suggestion to this effect had been made from the bench, I think that I should have withdrawn; it was clearly impossible for any jury to say that such a case had been made out as to exclude doubt.

"The names of the gentlemen who were my juniors are sufficient to show that the assistance I had was as powerful as any that could be obtained at the bar.

"In launching the evidence, I began with putting in the deposition of Lady Tichborne, who had died before the trial, and I afterward proceeded with witnesses who had known Sir Roger and undertook to identify him. Of these I called several. I thought before putting the plaintiff in the box it was desirable to give an air of probability to the story he was about to tell. At last the jury desired to have him presented to them, which accordingly I did. Great sensation and rustling of silks and satins accompanied the claimant as he rolled into the witness box. I have already described his appearance. Mr. Giffard took upon himself the laborious task of examining him in chief, and it is impossible to say that the effect produced diminished the unfavorable impression which, in the court at all events, had been produced by his appearance. His evidence lasted until the middle of the fourth day from its commencement, when

young when he came away, that she would not now know him. He wished to name Mrs. Lee's child Mary, after his sister. He was in

the Solicitor-General commenced his cross-examination, which continued for several days. This learned counsel seemed to lay in a fresh stock of ammunition every evening, commencing a vigorous discharge on each successive morning.

"One prominent and most damaging result was in exhibiting the claimant's utter ignorance of the French language, and Sir John's perfect familiarity with this and also with the classics enabled him to expose the witness upon these latter subjects in lights both startling and ridiculous. I presume that his object was not only to win the case, but entirely to destroy the claimant for any future attempt, and certainly no cross-examination was ever heard in a court of justice which exhibited more labor and industry, or was more completely successful.

"And if the Lord Chief Justice had then interfered and, without expressing any opinion of the actual merits of the case, had asked the counsel for the plaintiff whether they could hope for a verdict, whatever might be the justice of the plaintiff's claim, I think, as I have hinted already, that all of us would have admitted that we could not.

"And I feel quite sure that the jury were themselves prepared to indorse such a suggestion. However, the case went on, and the Solicitor General addressed the jury at great length and with marked ability, and proceeded to call witnesses, during which a defection occurred in our camp, and Mr. Rose, one of the firm of solicitors instructing us, embraced an adverse view. The subject is a painful one, which I do not wish to dwell upon; it caused the counsel much embarrassment and difficulty, and the course pursued by him was extremely inconvenient in the interest of our client.

"After the conclusion of his speech, the Solicitor-General proceeded to call witnesses, many of whom, as was the case with those called on the part of the claimant, were open to no suspicion of falsehood or dishonesty, amongst them Lord Bellew, and the people from Paris; and I believe that it was at this period of the trial that the tattoo evidence was for the first time started in the case. After a time I felt it to be impossible to obtain an affirmative conclusion, and that I was not justified in keeping up the case any longer, and accordingly determined to accept a nonsuit upon the part of my client. Some intimation must have been given that I intended to do so, as a grand *finale* was prepared, and the performance attracted a more than usually fashionable audience. The stage was grouped in somewhat a melodramatic fashion: the centre figure in his usual place in the body of the court, ladies pressing eagerly in every direction, and at the back, only dimly visible amongst the brilliant dresses, two dark figures, apparently greatly out of place, but in reality very important performers in the scene about to be performed. They were tipstaves, prepared to take the unhappy claimant into custody."

Of Dr. Kenealy's course in the criminal prosecution, Mr. Ballantine thus speaks:

"Finally, he took upon his shoulders the unnecessary burden of proving that

the Liverpool trade; had frequently been there, but said he could not leave his ship to go and see his sister. He never spoke of any other relative. He had a letter in his writing-desk, which he said was from his sister, and requested it to be read to him while on his death-bed. In addition to this, the letter from Mrs. McCreth was produced, stating where she lived, and how long she had there lived. And a Mr. Leary was produced to prove her actual residence, and identify her person. A letter in answer to this was also produced by her from Captain Talbot. In Mrs. McCreth's letter, she states her poverty; writes by way of Liverpool; requests her brother to direct his letters to No. 2 Lombard street, London, and further states: 'You may not be acquainted with my marriage, since I was, you know, very young when you left Newport, county Tipperary, Ireland.' This letter was found among his papers; he declared it to be from his only sister, and showed his sincerity by keeping it for ten or twelve years. In health, sickness, and insanity, he always spoke of his sister, and never of any one else. Upon these facts it appeared to be clear that he was an Irishman.

'On the other side, however, they attempted to show that Captain Talbot had always said 'that he was an Englishman; that he had four or five sisters; that Dickinson was the son of one of those sisters.' A petition by the captain for letters of naturalization, in which he states 'that he is a subject of the King of Great Britain,' was produced, which, however, was a little equivocal in its operation, as Ireland might be considered as embraced by the term 'Great Britain.' But to strengthen the defence, a number of sea-captains testified 'that Talbot had frequently told them he was born in England.' A portrait was also produced by Mrs. Lee, at whose house the captain died, which was said to bear a strong resemblance to the deceased; but even this did not remove the difficulty; for while one-

the defendant was really Sir Roger Tichborne, leaving it to be implied that, if successful, he would displace the existing possessor of title and property, instead of pointing out that under no imaginable circumstances could there be any such result, and appealing to the well-known principle of criminal law, that no man should be convicted whilst a doubt fairly existed of his innocence. I also have no hesitation in saying that, if the jury did not believe the tattoo evidence, there would have been a blow struck at the superstructure of the prosecution of so serious a character when joined to the other facts favorable to his case, and to which I have alluded, that it would fully have justified a jury in acquitting him."

half of the witnesses swore that it was the very counterpart of the English Captain Talbot, the plaintiff's testimony was just as strong to show that it was an admirable likeness of the plaintiff's brother, whom they professed to know, and that it even bore a strong family resemblance to the sister (the plaintiff).

"Mr. John K. Kane (afterwards judge of the District Court of the United States), was the counsel for the defendant. He enforced the testimony for the defence with great ingenuity and ability, and manifested no less skill and power in his assaults upon the evidence for the plaintiff. His theory was, that loose impressions, derived from thoughtless conversations of Captain Talbot, many years ago, had been misunderstood, or misrepresented by the plaintiff's witnesses; that it was exceedingly improbable that Captain Talbot should sail to Liverpool for years, and never visit his only sister, who was in London, but about two days' journey; that the letter received by him was supposed by him to be from the mother of the defendant, whose name was also Mary, a favorite sister, whose husband's name he probably supposed to be McCreth; that he had written his letter under that impression, and that the letter intended for one of these women fell into the hands of the other, and produced all this confusion. He dwelt, also, upon the want of credibility of some of the plaintiff's witnesses, and the bias and interests of others; he adverted to the fact of many years having elapsed without the plaintiff's asserting her claim; and he planted himself firmly upon the petition for naturalization, signed by Captain Talbot, and stating himself to be a native of Great Britain. He also maintained, that the portrait itself bore strong marks of English peculiarity of feature; and, lastly, that the defendant, being in possession of the property, was not to be deprived of it, but by conclusive, or, at least, most satisfactory proof on the part of the plaintiff, who could not be entitled to recover upon a doubtful title.

"The answer on the part of the plaintiff, by David Paul Brown, was, that it was not more remarkable that Talbot should not visit the plaintiff, than that he should not have visited the mother of the defendant, whose residence was proved to be nearer to London than Liverpool; that if he had not been born in Ireland, he never could have recognised the truth of the letter found in his possession, 'referring to the time when he left his sister Mary, in Newport, Tipperary, Ireland;' that if the witnesses were doubtful, the letter was

unquestionable; that Captain Talbot could not have supposed that the letter was from the defendant's mother, consistently with the notion that he was an Englishman; and, if he was not an Englishman, there was no defence. The credit of the plaintiff's witnesses was maintained, and that of the defendant's impugned; the fact of the mother of the defendant being rich, and the plaintiff poor, was referred to as corroborative of the relationship of the latter to the deceased, who had said 'that he had but one sister, and that she was poor, though respectable'; this poverty was also relied upon to explain her not having earlier instituted legal proceedings. As to the petition for naturalization, its apparent inconsistency with the plaintiff's claim was accounted for by its equivocation—by its having been loosely filled up, and carelessly signed—and instances confirmatory of this notion were cited; the matter of place of birth, as indicated by the portrait, was also minutely discussed, with very opposite deductions from those drawn by Mr. Kane; and, in conclusion, the plaintiff's counsel maintained that, although he had not established an unquestionable claim, his proofs far outweighed those of the defendant, and that the principle which obtained in criminal cases, that a reasonable doubt should discharge the defendant, did not prevail in civil suits. The case, nevertheless, resulted in a judgment for the defendant, and the poor plaintiff passed the remainder of her days in penury and misery, maintaining to her last moment her claims to the Talbot estate."¹

• § 625. How mistaken evidence of diversity, as distinguished from that of identity, can honestly arise, may be illustrated by the remarkable case of Lord Aberdeen, settled finally (1872) in the English House of Lords. A young nobleman of high birth, pure morals, and excellent education, is seized with a romantic passion for a sailor's life. He comes to New England, where, under a feigned name, he throws himself into the society of sailors and laboring men; lives in their homes, adopts their pursuits, and acquires their habits and their language, so that his new companions begin to look upon him simply as a respectable though reserved young man belonging to their own social order. He makes long cruises in sloops, in which his fellow-sailors regard him as one distinguished from themselves only by perhaps a little higher line of early education; and when one day, in a storm, he is swept overboard and is drowned, they have no suspicion

¹ Brown's Forum, pp. 508–513.

that the waves are swallowing the representative of one of the oldest and noblest of British peerages, the successor of an earl, who had only a few years before presided over the British ministry ; or that in a few months all that wealth, that power can do, at enormous cost, to collect evidence of that fact of drowning, will be invoked. Now, the sailors and farmers, who learned to look upon the young Earl of Aberdeen simply as a sailor, naturally invested him with the incidents of a sailor's history and life. In this way the conflict as to identity in this remarkable case can be explained.¹

§ 626. Numerous cases might be cited of the failure of the nearest friends to identify the body of a deceased person. Of these cases that of Morgan, elsewhere detailed,² is as remarkable for its judicial interest as for its momentous political consequences.

§ 627. 2d. *Means of identification—Skeleton.*—The means of recognising from the skeleton the age of the deceased, are found chiefly in an observation of the degree of ossification. A brief description of this process at different ages up to the time at which it is completed, will enable us to determine the question in an appropriate manner. One of the most reliable indications of age in the skeleton of a supposed new-born child, will be found in the osseous point in the cartilaginous epiphysis of the lower extremity of the femur. Its importance in this relation was first pointed out by Beclard, but has lately been further substantiated by the observations of Ollivier and Mildner.³ At the commencement of the last month of intra-uterine existence, there may be seen, upon a transverse section of this epiphysis, a spot which is more vascular and darker than the surrounding structure, in the midst of which a body of the size of a poppy seed or the head of a fly may be recognised, which, upon drying, will be found to be of newly formed bony matter. At the time of birth, this osseous point has attained the size of a pea or lentil, is hollow and incloses a porous and vascular substance—the shell itself being of a firm, bony nature. From the observations of the above-mentioned authors, it results that, 1st. If this osseous point be wanting, the skeleton is that of a foetus of not more than eight months; 2d. When it has attained the size of a poppy seed, or the head of a fly, the foetus is probably in the last month of gestation;

¹ See Burke's *Rise of Great Families, etc.* London, 1873.

² Wh. Cr. Ev., § 804.

³ Prag. Vierteljahrsschrift, 4, 1850.

3d. When it has acquired a diameter of one and a quarter lines, the full period has been reached; and, 4th. If the point of ossification be three lines, or more, it may be assumed that the child has lived after its birth. These statements have been verified by their authors, but, it is needless to say, that, having so important a bearing upon questions of infanticide, as well as upon other questions not less vital in their character, much additional confirmation is required to entitle them to our unreserved confidence.

§ 628. The length of the skeleton of a new-born mature child is between fifteen and sixteen inches. At the end of the *first* year, the two sides of the frontal bone are united in half their length, the fontanelles diminish in size, the temporal bone is still composed of four pieces, and the four incisor teeth have appeared. Points of ossification are found in the coracoid process of the scapula, in the ensiform cartilage, and in the patella. At the end of the *second* year, the length is about thirty-two inches; the four portions of the temporal bone form but one piece; the anterior fontanelle is usually closed, and both halves of the os frontis are united. Two canine and four molar teeth have made their appearance. The pelvic bones, which are afterwards consolidated in the acetabulum, touch each other; the epiphyses of the metatarsal and metacarpal bones are ossified, and points of ossification are seen in the lower end of the tibia and fibula. At the expiration of the *third* year, the sutures of the bones of the head have a zigzag appearance; all the first set of teeth are fully extruded; the odontoid process of the second vertebra is firmly united with the body; the spinous processes of the vertebræ ossify, as do the trochanter major, the patella, and the cuneiform bones. At the end of the *fourth* year, the child is about three feet long, the styloid process of temporal bone is formed, and the process of ossification continues in the parts mentioned. In the *fifth* and *sixth* year, no further trace of the division of the os frontis is found; the sutures unite, the arches of the vertebræ become united with the bodies and the lower extremity of the ulna, and the pisiform bones are ossified. In the *seventh* and *eighth* year, the second set of teeth replace the first. If the eight permanent incisors are present, the age is probably at least nine years. The canine and molar teeth make their appearance between the *tenth* and *twelfth* year, with the exception of the last molar, which is very irregular in the period of its extrusion. Orfila describes the ossification at this period as fol-

lows: At *eight* years, the upper extremity of the radius; at *nine*, the navicular bone of the carpus; at *twelve*, the trochlea of the os humeri; from *thirteen* to *fourteen*, the trochanter minor and the three parts of the os innominatum, which last is sometimes delayed till the fifteenth year; and at *fifteen*, the sacral vertebrae, are united together. From this period up to the age of twenty-five, the same author observes that the process of ossification is most noticeable in the following points: From *fifteen* to *sixteen*, the coracoid process of the scapula is united with the body of the bone, and the acromion contains an ossific point; from *fifteen* to *eighteen*, an osseous point in the sternal end of the clavicle; from *fifteen* to *twenty*, ossification of the last bone of the coccyx. At *sixteen* years, an osseous point is seen in the head and tubercles of the ribs; at *seventeen*, bony union of the epiphyses of the phalanges; and at *eighteen*, of the head and trochanter of the femur. From *eighteen* to *twenty-five*, union of the sphenoid and occipital bone of the three parts of the tibia; and from *twenty* to *twenty-five*, of the first piece of the sternum to the rest of the bone. Between *twenty-five* and *thirty* years, occurs the complete union of the first to the second bone of the sacrum; from *forty* to *fifty*, of the ensiform cartilage to the lower extremity of the sternum; and between this and the *sixtieth* year, the union of the sacrum and coccyx. In advanced life, the bones lose their density; the earthy matter predominates, and they hence become more brittle. According to Sömmering, they lose nearly a fourth part of their weight. They are yellower than in the previous years of life; the diploë in the flat bones disappears, so that the two plates of bone touch each other, are thin and sometimes lose their substance in this part, forming an opening. The sutures in the bones of the skull become indistinct, and generally first on the inside of the cranium. The intervertebral substance loses its thickness, and the borders of the cervical vertebræ are smaller before than behind. If the teeth have been lost, the alveolar processes become absorbed, but if they remain, they bear unmistakable signs of age in their yellow color and worn appearance. The ensiform cartilage is completely ossified, as well as those of the ribs. There are, however, no such alterations in the condition of the skeleton as would give more than an approximate appreciation of the exact age at this period of life.¹

¹ The foregoing statements have been taken chiefly from the works of Mendé, Nicholai, and Friedreich, who have devoted particular attention to the subject;

§ 629. *Stature and bones.*—When the whole skeleton has been preserved, and the articulating ends of the long bones have not been wasted by decay, the height of the individual can be obtained by adding from one and a half to two inches to the length of the skeleton. Should, however, the bony remains be in a fragmentary condition, an accurate estimate of the height of the living person cannot be made. Orfila and Sue have indeed, by assuming the superior border of the pubes to form the exact centre of the body (as it should do in a well-formed adult), considered it possible to calculate the height. The tables prepared by M. Orfila comprise, moreover, measurements of the several cylindrical bones, from which he proposes to calculate the stature of the skeleton and of the living body.¹ Dr. Guy has found, however, upon a careful examination of these tables, that they cannot be relied upon as accurate, since in one instance the upper half of the body exceeded in length the lower by five and a half inches, and in another the excess was six inches in a contrary direction. By taking the average of all the measurements, this author states that we may be in error to the extent of two and a quarter inches; and in the table of the measurements of the cylindrical bones we may be led into error in calculating from them the height of the skeleton, to the extent of more than four inches, and in no case of less than one and three-quarter inches.² Hence, owing to the false inferences (which occasionally may be of serious importance) to which these calculations may lead, the physician should use great reserve in giving an opinion as to the stature of the body, from the inspection of merely a portion of the skeleton.

Bones.—“In the case of mere fragmentary particles being submitted for examination, the medical jurist should content himself with stating whether or not they are bone, venturing no opinion as to their precise origin. If, however, several bones, or a more or less perfect skull be received, he may then be able to form an opinion whether they are human. Further than this it is not advisable to go.”³

§ 630. *Teeth.*—The most striking part of the evidence by which the identification of the remains of the murdered Dr. Parkman was

also from Dr. J. Miller, *Das Knochengerüste des Menschen, etc.*, in Henke's *Zeitschrift*, for 1852, 3 H. p. 62.

¹ *Traité de Méd. Lég.*, 4th ed.

² Guy *Forensic Medicine*, p. 24.

³ Tidy, *Leg. Med.* 1883, p. 54,

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secured was that given by the dentist, Dr. Keep. He testified that about three years previously he had made and fitted a set of teeth for Dr. Parkman, a set for each jaw, consisting of manufactured artificial teeth, formed in combinations of three blocks to each jaw, and set upon gold plates fitted and adjusted thereto. He stated that several natural teeth and stumps remained, to which, as well as to the natural shape and peculiarities of the jaws, it was necessary that the plates should be adjusted. An attempt having been made to consume the head by fire, in an assay furnace, the gold had melted away, but the mineral teeth, being composed of an infusible material, remained, preserving more or less of their original shape. Dr. Keep recognised the blocks of mineral teeth as of his own manufacture, and as having been made for Dr. P., and showed that they could have belonged to no one else, from their correspondence with the trial-plate and the mould of the jaw of the deceased, which had been carefully preserved and marked with his name. In addition, the lower jaw had a certain peculiarity of natural formation which served to distinguish it from others, and render the correspondence of the block of mineral teeth with it more significant than it might otherwise have been.

§ 631. Dr. Guy states that a doubtful case of identity, in Edinburgh, was decided by a dentist, who produced a cast of the gums which he had taken before death. The remains, also, of the Marchioness of Salisbury, discovered among the ruins of Hatfield House, were identified by the jaw-bone having gold appendages for artificial teeth.²

§ 632. In Mr. Sargent's history of Braddock's expedition⁵ it is stated that Sir Peter Halket, in 1758, after the reduction of Fort Du Quesne, proceeded to the spot of Braddock's defeat for the purpose of discovering, if possible, the remains of his father, who was there killed. "In reply to his anxious questions," we are told, "one of his tawny guides had already told Halket that he recollects, during the combat, to have seen an officer fall beneath such a remarkable tree as he should have no difficulty in recognising; and, at the same moment, another, rushing to his side, was instantly shot down, and fell across his comrade's body. As they drew near the spot, the detachment was halted, and the Indians peeped about through the trees to recall their memories of the scene. With speaking gesture,

¹ Guy's Forensic Medicine, p. 23.

² Philada., 1850, p. 277.

they briefly discoursed in their own tongue. Suddenly, and with a shrill cry, the Indian of whom we have spoken sprang to the well-remembered tree. While the troops rested on their arms in a circle around, he and his companions searched among the thick fallen leaves. In a moment, two gaunt skeletons were exposed lying together, the one upon the other, as they had died. The hand that tore away their scalps had not disturbed their position; but no sign remained to distinguish the relics from the hundred others that strewed the ground. At the moment, Sir Peter remembered him of a peculiar artificial tooth which his father bore. The bones were then separated, and an examination of those which lay undermost at once solved all doubts—‘It is my father!’ exclaimed the unhappy youth, as he sunk into the arms of his scarce less affected friends.’

A singular case of disputed identity, in which there was between two persons such a similarity of name, time, place, age, occupation, and circumstances, as for a long time utterly to perplex the investigation, occurred in London. The body of a woman supposed to have been murdered was missing, and another woman was arrested upon suspicion of having secretly made way with her and sold her remains for dissection. Both direct and circumstantial evidence brought the crime home to her. The day after the alleged murder, an old woman, of the description of the supposed deceased, was found, with a fractured thigh, lying exhausted in the streets. She gave her name as Caroline Walsh, and said that she was from Ireland. She died, and was buried at the London Hospital. The name of the missing woman was also Caroline Walsh, and she was also Irish. The prisoner, Elizabeth Ross, when arrested, insisted that this was the female whom she was accused of having murdered. Various points of difference were established by the evidence of a large number of witnesses, but the chief distinction was, that, while it was stated that the missing woman had very perfect incisor teeth (a remarkable circumstance for her age, which was eighty-four), the other one, who died at the hospital, had no front teeth, and the alveolar cavities corresponding to them had been obliterated for a considerable time. Moreover, the non-identity was further confirmed by the granddaughters of the missing woman, who swore that the exhumed body of Caroline Walsh was not that of their grandmother.

Teeth may determine age. The first, second, and third molars are cut respectively in the seventh, fourteenth, and twenty-first year.

"At nine years of age there will generally be 12 permanent teeth, viz., 8 incisors and 4 molars. At thirteen years there will be 28 teeth, viz., 8 incisors, 4 canines, 4 bicuspids, and 4 molars. In examining 1046 children of known ages, Mr. Saunders found that out of 708 of nine years of age, 389 had the full development of teeth for their age. But on the principle urged by him, that where the teeth of one side are fully developed, those of the other side should also be reckoned, 530 came up to the standard. Of the remainder, none would have varied more than a year from the standard—and these always by deficiency. Again, of 338 children of thirteen years, no less than 294 might, from their teeth, have been pronounced with confidence to be of that age. Of the remaining 44, 36 would have been judged to have been in their thirteenth year, and 8 at or about the completion of their twelfth year."¹ The wisdom teeth, it was said by Cockburn, C. J., in the Tichborne case, are "the last to come, and the first to go." But the last part of this assertion is by no means universally true. And the teeth, as a rule harden with age.

§ 633. Dress sometimes forms the means of identifying both living and dead.² In Barbot's case³ the peculiar dress of the prisoner was the means of identifying him.

§ 634. A woman was tried at Warwick Spring Assizes, 1818, before Mr. Baron Garrow, for the crime of arson. The prisoner had been met near the ricks which were set on fire, about two hours after midnight. A tinder-box was found near the spot, containing some unburnt cotton rags, and a piece of woman's neckerchief was found in one of the ricks where the fire had been extinguished. The piece of cotton in the tinder-box was examined with a lens, and the witness deposed that it was of the same fabric and pattern as a gown and some pieces of cotton print taken from the prisoner's box at her lodgings. A half neckerchief taken from a bundle belonging to the prisoner, and found in her lodgings, corresponded with the color, pattern, and fabric of the piece found in the rick, and it was deposed that they both belonged to the same square; and, from the breadth of the hemming, and the distance of the stitches on both pieces, which were hemmed with black sewing-silk of the same quality (whereas

¹ Tidy's Leg. Med. (1883), p. 210.

² Wh. Cr. Ev., §§ 13, 27, 806

³ 18 State Trials, 1229.

articles of that description are generally sewed with cotton), the witness clearly inferred that they were the work of the same person. The prisoner was capitally convicted, but, there being reason to believe that she was of unsound mind she was reprieved. Evidence of this kind must, however, be admitted with caution. On the trial of a young woman for child murder, it appeared that the body of a newly-born female child was found in a pond about a hundred yards from her master's house, dressed in a shirt and cap ; and a female witness deposed that the stay or tie which was pinned to the cap, and made of spotted linen, was made of the same stuff as the cap found in the prisoner's box ; but a mercer declared that the two pieces were not only unlike in pattern, but different in quality.¹

§ 635. *Voice.*—Peculiarity of voice may make a strong impression on the mind of the observer, and may materially aid in identification.² In Harrison's case,³ a witness testified that on the night when the deceased was found strangled in a hackney coach in the street, she saw a coach stop at a place named, and heard a person in the coach tell the coachman to go to a certain house, and when he did not go fast enough she heard him swear at him for going so slow. Afterwards she saw the coachman return with the deceased who entered the coach. The witness upon hearing the voice of the prisoner declared that it was the same she heard swear at the coachman on the night in question, and in this way led to a satisfactory identification.

§ 636. *Marks and scars.*—Besides the general appearance, dress, manner and voice of a person, peculiar marks upon the body are a very important, perhaps much the most reliable, means of identification. Scars, burns, cicatrices, fractures, etc., upon some portion of the body of the prisoner, distinctly remembered by those who have seen them, will generally be received as evidence of identity. Very often where the scars resemble each other they may have been caused by different agencies. In such cases the evidence of physicians can be brought to testify as to the cause of the wound. Still such evidence is not always reliable, for a mark of such a nature may exist from exactly the same cause in two different persons. It goes, however, a

¹ Wills, Circumstantial Ev. 96.

² See for authorities Wh. Cr. Ev., § 803.

³ 12 State Trials, 850, 860, 861.

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great way in establishing identity, and is generally conclusive, unless rebutted by stronger contradictory evidence.

§ 637. According to Böcker, the gender, age, size, stature, walk, bearing, color of hair¹ and eyes, shape of eyes and nose, appearance of teeth, the condition of the hands, feet, bones, and joints must be observed, together with changes produced by pregnancy, birth, miscarriage, disease, etc. Moles leave important evidence, which continue throughout life, unless cut away, and then a scar remains.

§ 638. Marks of branding, if not permanent, at least last for years, though it should be observed they may be fabricated.² Scars from injuries or disease can often be observed for a long time. In reference to the hair, it is to be observed that there are various means of changing its color. Different employments often impart some peculiarity to the hands or other organs.

§ 639. The above rules apply also to the examination of a dead body, in case the appearance has not yet been affected by decomposition.

§ 640. Scars, however, may be deceptive. On the bodies of several persons may be often seen scars so similar that at a short distance of time it is impossible to remember how they are distinguishable. Scars, also, may be simulated; and they wear out in the course of time. Of the effect of such testimony the Tichborne case, and that of Heaseman, to be presently given, may be taken as illustrations, to to which may be added the following:—

§ 641. In 1857 the body of a young woman, upon whom an abortion had been produced, and who had been murdered by a blow upon the head, was found in a ploughed field near Newburg, New York. The body was supposed to have been identified as that of Miss Sarah Bloom, and a man named Jenkins, with whom Miss Bloom was last seen, was arrested, and already a strong chain of circumstantial evidence, fixing, it was thought, the murder upon him, was made out. Jenkins insisted that the corpse was not that of Miss Bloom, and, as a matter of fact, after four days, when the mysterious corpse had been buried, Miss Bloom made her appearance alive and well. The resemblance between herself and the corpse, however, was remarkable. "The body," so speaks a reporter, "had a scar on the left eyebrow precisely where Sarah has one; the body had a cut on the main finger

¹ As to hair see *supra*, § 304.

² See as to this Sergeant Ballantine's comments, cited *supra*, §§ 623-4.

of the left hand precisely where Sarah has one of the same character; the body had a small black mole about half-way between the ankle and the knee, on the shin bone, exactly where Sarah has one; but, strangest of all, the body had two toes of the left foot grown together, precisely like Sarah's, except that Sarah's are not grown together so far down on the joint; the toes of both feet of the body, like Sarah's, were pressed together from wearing tight shoes, and Sarah wears a coral ring on just the finger from which on the corpse a ring had been stripped." These facts, connected with Sarah's disappearance, the equivocal story of Jenkins as to where he had left her, the incident of her going in a direction where she did not hear of the discovery of the body, and was not herself heard from for four days, combined to make a case of indicatory evidence on which a conviction might well have rested.

§ 642. The subject of identification by scars and other marks is discussed in another work.¹

§ 643. *Tattooing* is produced by pricking the skin with a needle, and then rubbing strong coloring matter into the punctures. The operation is painful, and attended with much inflammation, which subsides after two or three weeks, when the print becomes more or less permanent. Hutin, however, in his *Recherches sur les Tatouages*, reports that in 47 of 509 cases the tattooing disappeared entirely in periods varying from 28 to 60 years, and a partial disappearance took place between 10 and 64 years in 119 cases. The 345 cases that remained, however, preserved their vividness, though in some of them 60 years had elapsed since the operation. The permanency of the impression, we may therefore hold, is conditioned by the depth of the puncture and the strength of the coloring matter; and the marks, when made seriously by an expert, are therefore likely to be much more enduring than those made in jest by a companion. Tattooing, also, on a thin-skinned person is likely to endure longer than tattooing on a thick-skinned person. Tattooing may, it is said, be effaced by the application of a white-hot iron, or of powerful acids, but not without leaving a scar.²

§ 644. Hause's case, as reported in the Bangor Courier, and reprinted in the appendix to the second American edition of Ram on Facts, was a suit brought by James Hause, of Corinna, against Luther

¹ Whart. Cr. Ev., 8th ed., §§ 803 *et seq.* *Infra*, § 780.

² Tidy, Leg. Med., p. 192-3. See *supra*, §§ 623-4.

Hause of Troy, the charge being obtaining goods by false pretences. It was alleged that Luther Hause, of Troy, son of Seth Hause, at the time of trial, twenty-four years of age, was a wild, unrestrained boy, and at any time ready for mischief. He has a keen eye, and has been at work about this city for a few years as a common laborer. And last summer he imposed upon the family of James Hause, of Corinna, by claiming to be their long lost son, and in that character obtained money and goods to the amount of about one hundred dollars. It was for this offence that the present action was brought. James Hause, who is an intelligent man, a justice of the peace, and is respected by all who know him—a man of property and strongly attached to his children—testified that he had a son by the name of James Rowland Hause, who left home about three years since in company with a neighbor of his, went to New Bedford, and there shipped on a whaling voyage in a vessel by the name of Copia. The first he ever heard of Luther Hause, the defendant, was in June last, when three of his neighbors, who had known his son Rowland from his boyhood, were in Bangor and saw this young man, and asked him if his name was not James Rowland Hause. He said it was not; that his name was Luther Hause. But they thought they could not mistake the fact, and insisted upon his being Rowland, and, after much conversation with him, they urged him to return to his father's house with them. This he refused to do. These men returned home and informed the witness that they had seen and conversed with his son, at Bangor, and that he appeared to be partially insane or something of the kind and declared that his name was Luther Hause. This intelligence brought the witness and his wife immediately to Bangor, where they searched for their son, but they returned without finding him, or any person bearing his resemblance.

The day after the return home of the witness, Mr. Roberts called upon Mr. Hause for the purpose of procuring his wagon for a journey to Bangor. Mr. Hause told him if he found his son Rowland in Bangor to bring him home. Mr. Roberts returned home, taking with him the young man, Luther Hause, and then sent for the witness and his wife to come to his house. The invitation was at once accepted. Luther, the defendant, addressed the witness and called him father. He then turned to Mrs. Hause, threw his arms around her neck, kissed her, and said, "How do you do, mother?" Mrs. Hause stated that she did not at first fully believe that he was her son. He did not

look like her son. His eyes and hair were not the same color her son's were. Her son had large light blue eyes, light and somewhat curly hair, a light complexion, and smooth clear skin, and was shorter, thicker and heavier than Luther, who has small black eyes, black, coarse straight hair, swarthy complexion, and coarse, rough skin. In speaking to Luther she said, "Is it possible that this is my long lost son Rowland?" He answered, "Yes, mother, it is me." She then said to him, "If you are my son you have got a scar on your knee." He pulled up his pants and showed a scar on his knee. She then said, "My son had a scar on his breast, that was burnt in Mr. Andrews' shop." He pulled away his shirt bosom and showed a scar on his breast. She then said, "My son Rowland had a scar on his neck, under the ear." He held up his neck and showed a scar in that place on his neck. She then said, "One of my son's toes lapped over the other." He said, "one of mine is so." The young man then went to the house of Mr. Hause, and Mrs. Hause asked him to show her the room where he used to sleep; he went up the stairs to the room where her son slept, and after some hesitation threw himself upon a bed standing in the room, and said, "This is my old bed." Mr. Hause and his wife were then fully satisfied that he was their son, and provided him with clothes, &c. He remained at their house some five months, and the longer he staid the more they were satisfied he was their son. He acted strangely and did no work. Mr. Hause stated that he believed him to be his son, just as much as he believed his wife to be his wife. He said that some years ago there was a negro travelling around the country relating a vision that he had, and said no one could learn it. But that his son Rowland heard the negro repeat the vision twice and learned it. One day Mr. Hause said to Luther, "Do you recollect the negro vision?" "I declare," said he, "I've not thought of it since I went away, and I don't know as I can repeat half of it." He then commenced and repeated the most of it. This confirmed, in their minds, the fact that it was their son Rowland. Mrs. Hause stated, also, that he acted strangely at times. He would pray, sing, swear, and ask blessings. When she would ask him questions about the past, he would say, "You have been told and believe that I am not Rowland, and I will not tell you anything about it." But her strong affection for her son blinded her eyes, and made her believe that this young man was her son. Mr. Hause stated that some years ago he sold a man a yoke of oxen, and

went to Harmony in company with Rowland to see about them. This young man one day told him all about going to Harmony with him after the oxen.

§ 645. "Miss Rebecca Hause, daughter of James Hause, testified that she kept school last summer in Brewer; that Luther Hause, the prisoner, came to the house where she boarded, in company with a neighbor, who introduced him to her as Mr. Clark. She took no notice of him. This was on the fourth day of July last, in the forenoon. In the afternoon of the same day, she came to Bangor and stopped at the house of her uncle, John M. Foster, Esq. While there this same neighbor called, and began to talk with her about Rowland. He asked her if she thought she should know him if she saw him. She said she thought she would. He then pointed to Luther Hause, who was some distance from the house, sitting with his back towards her, and asked her if that was Rowland? She said it looked like him in the back. He then called Luther into the house: and introduced him to her as Rowland Hause, her brother. He said he called upon her in Brewer without telling who he was, to see if she would know him. He said he knew this man to be her brother Rowland, for he had talked with him. She, still doubting, said, 'If you are my brother, you have a scar on your head where I hurt you when you were a little boy.' She felt of his head and found a scar. He then told her he had been in Bangor some time. 'Why,' said she, 'have you not been home?' 'Because,' said he, 'I am poor, and my clothes are poor, and I am ashamed to go home. Sometimes I go by the name of Luther, and sometimes by the name of John Hause.'

"She testified that she thought he was her brother and made him promise to go home. He in return made her promise not to send word to her father that he was here. She kept her promise.

"Rebecca is a fine looking, intelligent girl, and it is astonishing that she could have been so deceived. When Luther first called upon her he had not been to Corinna. But after he had been to Corinna some time, he one day asked Mrs. Hause where his watch was. She answered that Rebecca had it, but remarked, 'It is not yours, you have not paid for it.' She testified that when her son Rowland was at home she told him that if he would milk for her till he was twenty-one years of age, she would give him the watch. He went away before he was twenty-one, and, consequently, had not paid for the watch.

She, therefore, supposing he was Rowland, said, ‘ You have not paid for the watch, but may have it if you want it.’ After being at Corinna some time, he told Mr. Hause that he had some money due him in Bangor, and he wanted to collect it. Mr. Hause let him have three dollars and he left for this city. While here he called upon his sister Rebecca, got the watch and six dollars in money of her and went to Thomaston, as he said. After a while he returned to Corinna again and went to school a few days; was quite unsteady and was taken sick. While he was sick Mr. Hause and family did everything for him they could. After he got better he started again for Bangor, Mr. Hause sending one of his daughters with a horse and carriage to bring him part of the way to this city. A few days after he left, Mr. Hause got a letter stating that his son Rowland was sick at Pearson’s hotel in this city. Mr. Hause took his horse and carriage and came to Bangor, paid the prisoner’s bills at Pearson’s and took him home to Corinna again.

§ 646. “ It was proved that he had protection papers in the name of James Rowland Hause, of Bangor. It was also proved that he had, while at Corinna, stamped the name of James Rowland Hause upon various articles of clothing. Several of the neighbors of Mr. Hause, took this young man to be Rowland Hause. Young men who had been schoolmates with Rowland, talked with Luther about past times, and became convinced that he was Rowland Hause. At last, a Mr. Dow came to Corinna, saw Luther, and said that he knew this young man, and his name was Luther Hause, and no mistake, and that he belonged in Troy. Thomas R. Gardner also recognised him as Luther Hause, and said he had lived by him seventeen years. James Hause then began to doubt the fact of Luther Hause being his son; and in order to settle the dispute existing in the family, and the community, as to his identity, a warrant was issued by Volney A. Sprague, Esq., against Luther, for obtaining goods under false pretences. He was arrested, and examined before S. K. White, Esq., of Exeter. Mr. Seth Hause, of Troy, was summoned and appeared at the trial, and there recognised the prisoner as his son. During the trial there was great excitement, and about four hundred persons were present, and apparently the mass of them in favor of Luther, believing him to be Rowland. The justice sustained the warrant, and upon the adjournment of the court, the sovereign mob hustled the prisoner out of the way. A warrant was issued against Luther Hause et als, for conspiracy to obtain goods under false pretences. That cause was

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tried before Justice Sprague, who discharged them. Justice White had issued a mittimus against Luther Hause, for want of bonds, and thus brought him before the district court. The case was conducted on the part of the state by the county attorney, Mr. Waterhouse. For the prisoner, Abner Knowles, David Barker of Exeter, and V. A. Sprague of Corinna. Mr. Knowles argued the case very ably and with a good deal of ingenuity, and contended that Hause and his family had deceived the young man instead of his deceiving them; that when he was first seen in Bangor he stated distinctly that his name was Luther Hause; that they dragged him to Corinna, and forced him to say that he was James Rowland Hause; there was no pretence that he was any one else than Luther Hause, and that James Hause, if he had opened his eyes to the light around him, might have known that he was Luther Hause. The judge charged very strongly against the prisoner. The jury after being out a very few minutes came into court with a verdict of guilty.

“We understand that the jury, upon the first ballot were unanimous for conviction. We also understand that James Hause learned some time since that his son, James Rowland, was in California, to which place he deserted from the vessel he sailed in; and yet he was made to believe that this young man was his son.”

§ 647. The following case is also reported in the sixth American edition of Ram on Facts:¹ Thomas Hoag, was indicted for that whereas Thomas Hoag, late of Haverstraw, in the county of Rockland, laborer, otherwise called Joseph Parker, now of the city of New York, cartman, on the 8th of May 1797, at the said city of New York, was lawfully married to Susan Faesch, and the said Susan then and there had for a wife, and that the said Thomas, alias, &c., afterwards, to wit, on the twenty-fifth day of December 1800, at the county of Rockland, his said wife being then in full life, feloniously did marry, and to wife did take, one Catharine Secor, &c. The first marriage was admitted by the counsel for the prisoner to be as stated in the indictment, and that the wife was still alive. On the part of the prosecution, Benjamin Coe testified: That he was one of the judges of the Court of Common Pleas in the county of Rockland; that he well knew the prisoner at the bar; that he came to Rockland in the beginning of September, in the year 1800, and there passed by the name of Thomas Hoag; that there was a person with him

¹ Appendix, p. 412.

who passed for his brother; but between those two persons there was no sort of resemblance; that the prisoner worked for witness about a month, during which time he ate daily at witness' table, and he of course saw him daily; that on the 25th day of December 1800, witness married the prisoner to one Catharine Secor; that witness is confident of the time, because he recollects that on that very day one of his own children was christened; that during all the time the prisoner remained in Rockland county witness saw him continually; he was therefore as much satisfied that the prisoner was Thomas Hoag as that he himself was Benjamin Coe. John Knapp testified that he knew the prisoner in 1800 and 1801; he was then in Rockland county, and passed by the name of Thomas Hoag; that he saw him constantly for five months, during the time the prisoner was at Rockland; that he was at the prisoner's wedding; that Hoag had a scar under his foot; the way that witness knew it, was that he and Hoag were leaping together, and witness outleaped Hoag, upon which the latter remarked that he could not leap as well now as formerly, in consequence of a wound in his foot by treading on a drawing knife; that Hoag then pulled off his shoe and showed witness the scar under his foot occasioned by that wound; the scar was very perceptible. Witness was confident prisoner at the bar was Thomas Hoag. Catharine Conklin (formerly Catharine Secor) testified, that she became acquainted with prisoner in the beginning of September, 1800, when he came to Rockland; he then passed by the name of Thomas Hoag; that witness saw him constantly; that prisoner, shortly after their acquaintance, paid his addresses to her, and finally, on the 25th of December, married her; that he lived with her till the latter end of March 1801, when he left her; that she did not see him again until two years after; that on the morning of his leaving her, he appeared desirous of communicating something to her of importance, but was dissuaded from it by a person who was with him and who passed for his brother; that Hoag, until his departure, was a kind, attentive and affectionate husband; that she was as well convinced as she could possibly be of anything in this world, that the prisoner at the bar was the person who married her by the name of Thomas Hoag; that she then thought him and still thinks him the handsomest man she ever saw.

§ 648. Here the prosecutor rested the cause, and the counsel for the defence called as a witness for the prisoner, Joseph Chadwick,

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who testified, that he had been acquainted with the prisoner, Joseph Parker, a number of years; that witness resides in this city; is a rigger by trade; that prisoner worked in the employ of the witness a considerable time as a rigger; that prisoner began to work for witness in September, 1799, and continued to work for him till the spring of 1801; that during that period he saw him constantly; that it appeared from witness' books that Parker received money from witness, for work which he had performed on the following days, viz: on the 6th of October, and 6th and 13th December, 1800; on the 9th, 16th and 28th February, and 11th March, 1801; that Parker lived from May, 1800, till some time in April, 1801, in a house in the city of New York belonging to Capt. Pelor; that during that period, and since, witness has been well acquainted with the prisoner. Isaac Ryckman testified, that he was an inhabitant of the city of New York; that he was well acquainted with Joseph Parker, the prisoner at the bar, and had known him a number of years; that witness and Parker were jointly engaged, in the latter part of the year 1800, in loading a vessel for Capt. Tredwell, of New York; that they began to work on the 20th day of December, 1800, and were employed the greater part of the month of January, 1801, in the loading of the vessel; that during that time the witness and Parker worked together daily; the witness recollects well that they worked together on the 25th day of December, 1800; he remembered it, because he never worked on Christmas day, before or since; he knew it was in the year 1800, because he knew that Parker lived, that year, in a house belonging to Capt. Pelor, and he remembered their borrowing a screw for the purpose of packing cotton into the hold of the vessel they were at work at, from a Mrs. Mitchell, who lived next door to Parker; that witness was one of the city watch, and that Parker was also at that time upon the watch, and that witness had served with him, from that time to the present day, upon the watch, and never recollects missing him any time during that period from the city. Aspinwall Cornwall testified, that he lived in Rutger street, and had lived there a number of years; that he kept a grocery store; that he knew Parker, the prisoner at the bar, in 1800 and 1801; that Parker then lived in Capt. Pelor's house; that he lived only one year in Pelor's house; that Parker, while he lived there, traded with witness; that witness recollects once missing Parker for a week, and, inquiring, found he had been at work on Staten Island, on board one of the United States fri-

gates ; that, excepting that time, he never knew him to be absent from his family, but saw him constantly. Elizabeth Mitchell testified, that she knew Parker, the prisoner at the bar, well ; that in the years 1800 and 1801 Parker lived in a house adjoining to one in which witness lived ; that the house Parker lived in belonged to Capt. Pelor ; that witness was in habits of intimacy with Parker's family, and visited them constantly ; that Parker being one of the city watch, she used to hear him rap with his stick at the door, to awaken his family, upon his return from the watch in the morning ; that she also remembered, perfectly well, Parker's borrowing a screw from her on Christmas day, in 1800 ; she offered him some spirits to drink, but he preferred wine, which she got for him ; the circumstances of her lending the screw to him she was the more positive of, from recollecting, also, that it was broken by Parker in using it ; that Parker never lived more than one year in Capt. Pelor's house, and from that time to the present day, witness had been on the same terms of intimacy with Parker's family ; she therefore considered it as almost impossible that Parker could have been absent from town, any time, without her knowing it ; and she never knew him to be absent more than one week, while he lived at Pelor's house. Other testimony to the same effect followed.

§ 649. The prisoner's counsel here rested his defence, and testimonies on behalf of the prosecution were continued.

Moses Anderson, testified, that he had lived at Haverstraw, Rockland county ; that he had lived there since the year 1791 ; that he knew prisoner at the bar well ; that he came to the house of the witness in the beginning of September, 1800 ; that he then passed by the name of Thomas Hoag ; that he worked for the witness eight or ten days ; that from that time till the 25th of December, prisoner passed almost every Sunday at witness' house ; that during prisoner's stay in Rockland county witness saw him constantly ; and if prisoner was the person alluded to, he had a scar on his forehead, which he told witness was occasioned by the kick of a horse ; he had also a small mark on his neck [those marks the prisoner had] ; he had also a scar under his foot, between the heel and ball of the foot, occasioned, as he told witness, by treading on a drawing knife ; *that that scar was easy to be seen* ; that his speech was remarkable, his voice being effeminate ; that he spoke quick and lisped a little [these peculiarities were observable in prisoner's speech] ; that prisoner supped at witness'

house on the night of his marriage in December, 1800; that witness had not seen prisoner until this day, since prisoner left Rockland, which was between three and four years ago; that witness was perfectly satisfied in his own mind that prisoner was Thomas Hoag. Lavina Anderson testified, that she knew prisoner at the bar; his name was Thomas Hoag; that in September, 1800, he came to witness' house in Rockland county, and worked for her husband eight or ten days, then worked for Judge Suffrein; every Saturday night, until the prisoner was married, he and a person who passed for his brother came to witness' house and staid till Monday morning; that witness washed for him; there was no mark upon his linen; that prisoner, if he is Thomas Hoag, has a scar upon his forehead, and one also under his foot; was certain of the mark under his foot, because she recollects that the person who passed as his brother, having cut himself severely with a scythe, and complaining very much of the pain, Thomas Hoag told him he had been much worse wounded, and then showed the scar under his foot. Witness also testified that about a year ago, after a suit had been brought in the justices' court in New York, wherein the identity of the prisoner's person came in question, witness was in town, and having heard a great deal said on the subject, she was determined to see him and judge for herself; that accordingly she went to the prisoner's house, but he was not at home; she then went to the place where she was informed he stood with his cart; that she there saw him lying on his cart with his head on his hand; that in that situation she instantly knew him; that she spoke to him and when he answered she immediately recognised his voice; that it was very singular, shrill, thick, hurried, and something of a lisp; that Hoag had also a habit of shrugging up his shoulders when he spoke, which she also observed in prisoner; that prisoner said he had been told she was coming to see him, and it was surprising people could be so deceived, and asked witness if she thought he was the man, to which witness replied that she thought he was, but would be more certain if she looked at his forehead; that she accordingly lifted up his hat, and saw the scar upon his forehead, which she had often before seen; that prisoner then told her it was occasioned by the kick of a horse. Witness added that it was impossible she could be mistaken—prisoner was Thomas Hoag. Margaret Secor testified, that about four years ago she lived at Rockland with her father, Moses Anderson; that prisoner at the bar, Thomas Hoag, came to their

house in September, 1800; that he remained in Rockland five or six months; that he had a scar on his forehead; that Hoag used to come every Saturday night to her father's to pass Sunday with them; that she used to comb and tie his hair every Sunday, and thus saw the scar; that witness married about two years ago, and came immediately to live in the city of New York; that after she had been in town a fortnight, she was one day standing at her door, when she heard a cartman speaking to his horse; that she immediately recognised the voice to be that of Thomas Hoag, and upon looking at him, saw the prisoner at the bar, and instantly knew him; that as he passed her he smiled and said, "How d'ye do, cousin?" that the next day he came to her house and asked how she knew he was the man; witness replied she could tell better if he would let her look at his head; that accordingly she looked and saw a scar upon his forehead, which she had often remarked upon the head of Hoag. Witness admitted she had mentioned her suspicions to her husband, and that her husband had told prisoner of it, and had brought him to the house. Witness added that she was confident prisoner was the person who passed at Rockland as Thomas Hoag. James Secor testified, that he had been married about two years and a half; that he brought his wife to town about a week after his marriage; that he knew Hoag in Rockland, and had repeatedly seen him there; when he saw prisoner at his house in town, thought him to be the same person; witness' wife had mentioned to him that Hoag had a remarkable scar on his forehead, and when prisoner was at witness' house, he saw on his head the scar that his wife had described. These witnesses were corroborated by several others.

§ 650. The following notice of a trial was published in a Lowell paper, in the fall of 1845, and is reprinted in the appendix to the third American edition of Ram on Facts.

On Saturday, the 26th of July, as a number of young girls and a little boy were out gathering berries in Medford, one of the girls, aged about twelve years, was accosted by a young man whom they had seen for some time near them picking berries, who asked her if her name was Ann, and on her replying that it was, he told her that a person a short distance from the bushes wished to see her, and offered to conduct her thither. She followed him; he then made an assault upon her, telling her that if she screamed he had a knife in his pocket. He thus prevented an outcry, but failed in accomplishing his purpose.

The girl shortly joined her companions, and appeared very much frightened, and on reaching home told the circumstances to her friends.

§ 651. The next case occurred in Newton, on the following Monday, the 28th July, and here too it appeared that a number of girls were out gathering berries, when a young man near them, and whom they had noticed for some time, came to one of the little girls, and asked her if her name was Ann ; she answered it was not. He then told her that a child was crying in the bushes, and desired her to go and see it ; and upon reaching a secluded spot, took hold of her and told her that if she made any noise he had a knife in his pocket. The screams of the unfortunate girl were heard by her little companions, but they dared not approach her. She was also heard by several people in the neighborhood. A Mr. Houghton and his wife, who came to her assistance, testified that when near they saw a man near the girl, with his back to them, and the little girl was picking up the berries which were spilt upon the ground. The girl was crying, and appeared much frightened, her face scratched, and her dress much torn—the scoundrel again escaped, was seen and pursued, but not overtaken.

§ 652. On the 14th of August following, the prisoner was seen by the same Houghton drinking at his well, and was immediately recognised by him and his wife, as the same man they had seen on the 28th July, and who committed the assault upon the girl. The prisoner was soon arrested, and on being told on what account, said he could prove that at the time of the commission of these crimes he was in New Hampshire. He was immediately taken to a hotel in Watertown, and the two girls spoken of together with fifty or sixty persons, attended the examination of the prisoner ; the girls were separately taken into a room, and they each pointed out the prisoner as the man who had committed the assault upon them. The prisoner was then taken to a squire's office in Cambridgeport, and the witnesses in both cases sent for, and they in turn severally identified him as the man. One man swore that he saw the prisoner on the 26th of July, and had considerable conversation with him, and that he took considerable notice of him, as he bore a strong resemblance to a relative of his. He identified the prisoner at once as the man. All the witnesses, to the number of ten, swore that they had not a doubt that the prisoner at the bar was the same person they had seen at Med-

ford on the 26th July, and at Newton on the 28th, and who had committed these crimes.

§ 653. The counsel for the defence contended that they should prove an alibi—that the prisoner was in New Hampshire at the time the offences were committed. To prove this they called a Mr. Ames, of Keene, who testified that the prisoner rode with him on the 22d of July last, and that he saw him every day from that to the 28th, and during that time the prisoner bought a trunk at his store; the trunk was in court; and the witness identified it at once as the one he sold. He said the prisoner boarded at the Eagle Hotel in Keene. The barkeeper of the Eagle Hotel was called, and confirmed this, and further testified that he sat beside the prisoner every day from the 22d to the 28th July, that the prisoner was constant at his meals, and that he saw him frequently besides, and conversed with him; both witnesses testified in the strongest manner that they saw the prisoner at a caravan show on the 26th July in Keene. A stage driver testified that on the 28th July (the day on which the assault was committed in Newton), the prisoner registered his name in the stage office at Keene for Concord, and that he rode on the seat with him all the way from Keene to Concord that day, and had considerable conversation with him. Mr. Stewart, a tailor in Concord, testified that he made a pair of pantaloons for the prisoner on the 26th of July, and from a peculiarity of make identified those now worn by the prisoner in court as those he made. Another witness testified that he saw the prisoner about the 1st of August in Monmouth, on his way to Nashua. Several of the witnesses were recognised by the prisoner in court, and called by name by him; every one of these witnesses swore that they had not a doubt that the prisoner at the bar was the same man they saw in New Hampshire as described.

§ 654. The counsel for defence here rested their case. The counsel for the government admitted the alibi on the 26th and 28th July, but thought the government witnesses were mistaken as to dates, and thought it might have been on the 19th and 21st of July, but the dates could not be altered, and the jury acquitted the prisoner without retiring from the court room, and he was discharged. There is one thing very remarkable about the case; that is, that a person so nearly resembling the villain who committed these enormities should be immediately recognised by all these witnesses for government, at the well of Mr. Houghton, drinking, only two weeks after the offences

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were committed ; it would seem still more strange that the prisoner, if guilty, should be found there ; there probably never was a fact more satisfactorily proved than the innocence of the prisoner.

§ 655. In Gen. Townsend's "Anecdotes of the Civil War," published in New York in 1884, (pp. 152 *et seq.*) we have the following :—

"In the latter part of September, 1866, it was reported to me that an unknown man, laboring under insanity, and without the power of speech, had been found at Tallahassee, Florida, by the United States troops, when they occupied that place. He had been there about fifteen months, and no one knew anything about his history. He was supposed, however, to be a Union soldier. A notice of him having appeared in some Northern papers, several persons applied for permission to visit Tallahassee, in hopes of finding a missing relative. With the view of bringing him to a more accessible place, and thus increasing the chances of his being identified, and also in the hope that contact with familiar objects might restore him to reason, I sent orders to have him transferred to the Government Hospital for the Insane, at Washington, under the charge of an intelligent attendant, who might turn to advantage any sign of returning reason. He was admitted there the last of November, 1866. The superintendent of the hospital published personal descriptions of the man in newspapers at the North, and several persons came to see him. In August, 1867, a Mrs. Houghton, from Ontario county, New York, brought me a note from the superintendent of the hospital, stating that Mrs. Houghton had spent some hours with the unknown man, and that she believed him to be her husband. Dr. Nichols thought she was not mistaken, but was not quite so confident of his identity as she was. He recommended that she and the man should be examined together by some medical officers of the army. Accordingly, he was sent to the city, and examined by Surgeon-General Barnes and assistant Surgeon-General Crane, and Dr. Nichols, superintendent of the hospital, Mrs. Houghton and myself being present. The result was given in a certificate, signed by the medical gentlemen, that they were satisfied the unknown man was Thomas B. Houghton, late a private soldier in the 140th Regiment, New York Volunteers, that Elizabeth E. Houghton had fully identified and proved him to be her husband. The same day Mrs. Houghton made affidavit that her husband, Thomas B., was a private soldier in Company H., 140th regi-

ment, New York volunteers, and that she had been informed by the returned volunteers of the company that he disappeared from his command as the army was advancing to attack Fredericksburg, and that, having been taken sick on the march, he was told to get into the nearest hospital ambulance, and that he had not been heard of afterward. From several marks she had seen on the person of the unknown, she identified him to be her husband. Mrs. Houghton produced testimonials from respectable people in Ontario county, who were known to parties in Washington. The muster-rolls in the adjutant-general's office corroborated Mrs. Houghton's statement. The age and description of Houghton, as given in the muster-rolls, corresponded with the appearance of the unknown man, and Mrs. Houghton's account of her husband. Some of the proofs of identity were certainly most remarkable. It was stated in the newspapers that the unknown man had a singular mole on his back. Mrs. Houghton, having declared that such was the fact as to her husband, was asked by the doctor to describe it and place her finger on it. She gave an accurate account of its size, shape, and appearance, and touched the spot where the 'mother mark,' as she called it, was located on her husband. The doctor insisted that this man's mole was much higher up, but she maintained that her husband's was just where her finger indicated. On uncovering the place, she was found to be singularly accurate. No mention had been made in the public prints of scars, but she described one on the forehead under the hair, and one on the foot, both of which were found as she said. Three remarkable scars of different size were found across the upper part of one shin, which had been erroneously supposed to have been caused by a musket ball, though it was not easily seen how a ball could have passed through the flesh in such a direction without fracturing the bone. Mrs. Houghton had not seen those scars, but, when asked if she recollects any like them, she said that, some years before her husband left home, he was standing on a stool and reaching up to take a saw down from a beam in the shed, when the stool slipped and the saw fell across his leg below the knee. She did not remember which limb it was, but she knew that scars were left by the wounds. Thus, these curious scars on the unknown man were satisfactorily accounted for. The doctors had seen clusters of small scars on the breast and back of the unknown. Mrs. Houghton, when questioned about them, said her husband was once engaged in washing sheep in a river under a hot sun; that he

wore a red flannel shirt, and, when he came home, his neck and chest was covered with an eruption; she dressed the places with cream, but without giving relief; and he was under a doctor's care for two months before a cure was effected, leaving deep scars as described.

§ 656. "General Barnes had known such cases, where poisonous substances in the dye of the red flannel had caused ulceration of the skin when excited by heat. To show the woman's good faith, when her attention was directed to some scars on the man's arms, she at once said that there were none such on her husband's, except one where he had been vaccinated. Dr. Nichols, however, stated that these scars were evidently of recent origin. It was a common error among medical men, not specially skilled in cases of insanity, to freely bleed the patients, and this vicious practice was apt to produce precisely the kind of dementia under which this man was laboring. Mrs. Houghton brought with her a lock of her husband's hair, and a daguerreotype of him, taken just before he left home. Examination with a microscope failed to detect any difference in texture or color between this hair and the man's when they were laid together, except that the latter had a slight sprinkling of gray, which might easily have occurred in the time he was away from home. Mrs. Houghton noticed a want of close resemblance between this man and her husband when his picture was taken, but that could be accounted for by lapse of time and suffering, as well as change of dress. She said that when the man was looking down she could discover no trace of her husband's expression of countenance, but when his attention was attracted and he looked up as if to speak, his attitude and expression were familiar. The color of the eyes—a singular light blue—was common to this man and to the picture. The daguerreotype showed a remarkable taper to the fingers. The thumbs were long and delicately pointed at the ends—a most unusual thing among laboring men. This was a marked peculiarity of the unknown man's hand. He had also a habit of twirling one thumb over the other while sitting, as if in meditation. Mrs. Houghton mentioned this as a notable custom of her husband. Mrs. Houghton said that, from wearing short shoes, her husband's toes were bent under, so that he was sometimes lame in consequence; examination revealed the same formation in this man. No positive conclusion could be drawn from the effect of Mrs. Houghton's presence upon the man. He had some slight degree of intelligence: when told to stand up he comprehended with difficulty, but

obeyed ; and he seemed excited by the presence of persons to whom he was unaccustomed. Mrs. Houghton, in conversing with him, had endeavored to elicit some sign of recognition by telling in brief sentences of his family and friends. He sat by her side passively, but several times looked up quickly and seemed to make an effort to speak. She said that in the morning, after the first night which she passed in the ward, she sat by him, talked for some little time, and then, wishing him good-by, arose and went toward the door. He promptly got up and followed her, a thing quite unusual. Stopping at the door, she turned, put out her hand, and said, ‘ Come, Thomas, won’t you go with me ? ’ He turned back with his face toward the wall and trembled violently. She related this circumstance with great emotion, which she exerted herself to suppress, and seemed to think it a proof that he recognised her. In her subsequent meetings with him he showed less excitement than at first.

§ 657. “ In view of all this remarkable chain of circumstances it was not a surprise to me, but rather a peculiar gratification, when General Barnes sent me, rather more than a year after, the following copy of a letter from Dr. Nichols, indicating, as it seemed beyond a possibility of doubt, that the last link of the chain had been forged :

“ ‘ Government Hospital for the Insane, near
WASHINGTON, D. C., Jan. 29, 1869.

“ ‘ Brevet Major-Gen. J. K. BARNES, Surgeon-Gen. U. S. Army :

“ ‘ GENERAL : From the deep interest you have manifested in this case, I feel sure that you will derive as much pleasure from the intelligence as I do in being able to communicate it, that Thomas B. Houghton, late private in the One Hundred and Fortieth Regiment, New York Volunteers, spoke on Saturday last, saying, in a distinct, but low tone of voice, ‘ yes sir,’ in reply to a leading question in respect to his health, by Dr. Eastman, the physician in immediate charge of him. He spoke somewhat more freely than he did at first, but still hesitatingly and timidly, and only in brief reply to direct questions. His answers are intelligent, however, and his intelligence appears to be increasing every day. When asked his name this morning, he distinctly replied that it was ‘ Thomas B. Houghton ; ’ when asked the name of his wife, he shook his head and said, ‘ I don’t know, sir,’ and, when asked where he was from, he replied, ‘ New York.’ You will recollect the case of late private Houghton,

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as that of the unknown man who was admitted to this hospital November 28, 1866, from the general army hospital at Tallahassee, Florida, in which he had been under treatment for about fifteen months, having been received as destitute, sick and under the supposition that he had been a Union prisoner among the rebels, and who was identified in your office on the 23d of August 1867, as Thomas B. Houghton, late, etc., husband of Elizabeth E. Houghton, of Ontario county, New York. Houghton did not speak while in the Tallahassee hospital, and has not spoken since he has been under the care of this institution till last Saturday, and it thus appears that he was entirely dumb, for a period of three and one-half years, and, as he was in a feeble, passive condition, and did not speak when admitted to general hospital, the disuse of his voice probably antedated that period many months. I now intend to address another communication to you in relation to this case when its history and result are more fully developed. As an identification of late private Houghton was primarily due to Brevet Major-General H. D. Townsend, Assistant Adjutant-General, who ordered his transfer from Tallahassee to this hospital, where he would be more accessible to those in pursuit of lost friends, and who, as you are aware, displayed a deep personal interest in this extraordinary case, I respectfully suggest that he be apprised of Houghton's improvement, and of the interesting event of his having found his long lost voice. I am, general, very respectfully,

Your obdt. servant,

C. H. NICHOLS,

Superintendent, etc.'

§ 658. "Time wore on, and I occasionally heard that our patient was progressing favorably. His wife had gone home, preferring to leave him in the Government Hospital, where he could have far better attendance than she could procure. He steadily improved, and began to converse a little. He was employed at light labor, and grew robust in health. Suddenly, one day, when some one addressed him by the name of Houghton, he laughed and said that was not his name. He gave another name, and, when asked if he did not belong to the One hundred and Fortieth New York Regiment, he said 'No.' A few days after he said, with a peculiar chuckle, that he had never been a Yankee soldier, but had been overseer of a plantation in Georgia, or, as he called it 'a negro driver.' When Dr.

Nichols heard this he questioned him at different times, until the man stated he was a native of Georgia. He gave the town where he lived, and the names of persons residing there and elsewhere in the state. He said he had gone into Florida on business, and had been drafted into a company of Florida conscripts; that he lost his mind soon after, and did not remember anything that had since occurred. Dr. Nichols wrote to the persons he named, and from their replies became convinced that the story was true. Thus all our circumstantial evidence was completely overturned. When he was quite restored, the man expressed a desire to go to the South, and he was sent accordingly. His answering at first to the name of Houghton may be accounted for by his having been called by that name, and hearing himself spoken of as from New York, for sometime after his intelligence began to return."

§ 659. Upon accuracy of narration, also, the effect of evidence as to identity is largely dependent. It should be remembered that an opinion as to identity is a fact, and should be testified to as a fact.¹

§ 660. *Inference of certainty.*—It must be remembered that the value of inferences based on marks and eminently on general appearance depends upon the presumption of certainty of the human frame. This presumption fades with the lapse of time. The man whom I saw yesterday I readily recognise to-day. The man whom I see to-day I will recognise only with difficulty ten years hence, and if twenty years pass, almost all the traits to which my memory would attach will have vanished.²

§ 661. Permanence in individuality is the basis of all our inferences as to identity. In order to make these inferences we assume two things: (1) That no two individuals are precisely alike, each individual having his perceptible differentia; (2) That these distinctive features are not capable of voluntary change; and that he who possesses these features to-day may be inferred to have possessed them yesterday, and that he who possessed them yesterday may be inferred to possess them to-day. The first of these assumptions—that of the apparent distinctiveness of all human beings, so that no two persons are precisely alike—is one of the axioms on which society rests. It may be possible that there are adults so precisely alike as to be undistinguishable even by those who know them best; but the cases of such

See Whart. Cr. Ev., 8th ed., §§ 806-8.

¹ Id. 803.

supposed identity are so imperfectly substantiated, that it is far more probable that the witnesses testifying were mistaken than that such similitude actually existed. There are cases, also, in which mimics have been able to assume for a short time the appearance and expression of others, or to obliterate their own peculiar features, but these deceptions can be maintained but for very brief periods, and vanish when pursued by close tests. We have a right to hold, in fact, that it is an absolute law that each individual should have certain features assigned to him by which he is distinguishable from all others ; and that these features, while subject to gradual modification by age, should yet retain their characteristics so as to be distinguishable for months, even under the most artful disguises.¹ The whole figure may be changed by dress ; the hair may be cut off or dyed ; yet the eyes, the nose, the mouth, the voice remain, each of which possesses traits which cannot be defaced by any means short of destruction. "The Trimmer," says Macaulay, when narrating, in a striking passage, the arrest of Jeffreys, "was walking through Wapping, when he saw a well-known face looking out of the window of an ale-house. He could not be deceived. The eyebrows, indeed, had been shaved away. The dress was that of a common sailor from Newcastle, and black with coal dust ; but there was no mistaking the savage eye and mouth of Jeffreys." But the face is not the only test. Voices are equally distinguishable, and their distinguishability has been made the basis of convictions in criminal courts.² A much more difficult point arises when we take up the question of the change of appearance by time. Undoubtedly the presumption of continuance, which is now immediately before us, extends so far as to justify us in saying that a person will continue to look to-morrow, next week, or even next month, as he looks to-day. When we take longer periods, however, the presumption fades gradually away. All persons who have reached middle life, and who have been absent for years from their school or college companions, are aware what alterative effects ten or fifteen years have on the countenance, and how after forty or fifty years the features which once constituted individuality have acquired such new expressions as to defy recognition. It may be said that this is because of the weakened memory of the observer. But that there is a material

¹ See *Brown v. Com.*, 76 Penn. St. 319.

² *Com. v. Scott*, 123 Mass. 222; *King v. Donahue*, 110 Mass. 155. In *Brown v. Com.*, 76 Penn. St. 319, a confession was identified by voice.

and sometimes decisive change in the parties observed arises from the necessary action of time on the countenance, and is illustrated by photographs taken of the same person at different stages of life. We must remember, also, that while two persons (*i. e.* twins) may be undistinguishable, except by near relatives, at an early period of life, they diverge, as they grow older, and gradually assume distinct types. We must therefore hold that the presumption of continuance, when invoked in questions of identity, cannot be extended further than to imply such a continuance of appearance as is subject to the usual modifications of time.¹

¹ Whart. Cr. Ev., § 803.

"Now, the question being one of identity, a good deal has been said about the doubtful nature of the inquiry, and of the only proof which, generally speaking, can be produced of identity; and I quite agree that it is one of the most difficult questions with which courts of justice and juries have to deal, and that it is one of those questions upon which they are occasionally liable to go wrong. But ordinary cases of identity are very different, indeed, from the present. Frequently a man is sworn to who has been seen only for a moment, or for a very short space of time. A man stops you on the road, puts a pistol to your head, and robs you of your watch or your purse; a man seizes you by the throat, and while you are half strangled, his confederate rifles your pockets; a burglar invades your house by night, and you have only a rapid glance to enable you to know his features. In all these cases the opportunity of observing is so brief that mistake is possible, and yet the lives and safety of people would not be secure unless we acted on the recollection of features so acquired and so retained; and it is done every day. There are instances, indeed, in which the supposed recollection of the features of a person accused has proved faulty. I have known such instances myself. I remember to have been present years ago at a trial, which I never shall forget, on the western circuit, in which two men were tried for murder. They were both convicted, one upon evidence of identity given by numerous persons, who all swore to the man. He was convicted, and if execution had followed upon conviction with the rapidity it did at an earlier time, the man would have been executed. It was proved afterwards, beyond all possibility of a doubt, that those who had sworn to the identity of the man were mistaken. He had been taken up for picking pockets on the day the murder was committed, hundreds of miles away from the place; he was in confinement at the time under the latter charge; there was not the slightest doubt in the world about it. The man was of course reprieved. I tried a case not very long ago at Hartford, where a man charged with night poaching, and with a most serious assault upon a keeper—the keeper having been most cruelly used. The keeper was a most respectable man, head-keeper of a nobleman in the country. Nobody doubted his perfect veracity and intention to speak the truth, and he swore most positively to the man. I had not the slightest doubt of his testimony. The jury convicted the prisoner. It turned out afterwards that we

§ 662. The point above stated is thus discussed by Professor Bowen : “The specific gravity of any elementary substance, the proportions in which such substances are chemically united into compounds, the definite forms into which they crystallize, the modes of actions or affinities of different reagents, and many other similar instances of nature’s work in this province, are precisely similar to each other ; they do not vary even by a hair’s breadth. Far otherwise is it in the world of living organisms, where variety is the rule and uniformity is the

were all mistaken. It was shown satisfactorily that he had been mistaken for another man. Therefore I quite agree with what was said by the learned counsel for the defendant, that in ordinary cases identity is a very difficult point ; and here it is the question at issue in this case. But in the cases I am speaking of, you have merely the evidence of persons who have had a short and casual opportunity of becoming acquainted with the appearance of the individual. Here we have a much wider range of proof; but at the same time the inquiry is one which has its own peculiar difficulties ; for whereas in the cases to which I have been referring the recollection is called forth in a court of justice speedily after the event, here we are dealing with the identity of a man alleged to have been dead ever since 1854—twenty years ago—and the asserted identity of another man who for a great number of years has disappeared from the knowledge of all those who knew the undoubted man, from the year 1854, at all events, until the year 1866 or 1867. And if in ordinary cases evidence of identity is calculated to mislead us or embarrass us, how much more must it do so in a case like the present, where you have a host of witnesses on the one side confronted with an equal host on the other ; where, with the exception of the mother, you have an entire family—I say an entire family, for I attach no value to the opinion of Mr. Biddulph—a body of persons who were as familiar with Roger Tichborne, whose existence is in dispute, as it is possible for people to be, and who deny the identity of the defendant ; and, on the other hand, the mother of the undoubted Roger Tichborne asserting that he is her son ; a host of witnesses coming forward to say that he is not the man, and an equal, or perhaps a greater number coming forward to say that he is, while the matter is still further complicated by this extraordinary circumstance, that while the defendant says, ‘I am Roger Tichborne,’ and produces numerous witnesses to say that he is, and another vast array of witnesses come forward to say he is not, the identity of the man who thus claims to be Roger Tichborne, with a totally different individual, namely, Arthur Orton, is in like manner asserted and contested. So that the defendant stands, as it were, between two persons—between Arthur Orton on the one hand, and Roger Tichborne on the other ; and while he asserts he is Roger Tichborne, a host of witnesses declare that he is Arthur Orton, so that the same conflict which occurs with reference to his identity with Roger Tichborne occurs with reference to his identity with Arthur Orton ; and you have witness after witness produced to say he is Arthur Orton and witness after witness to say he is not.”—Cockburn, C. J., charge in Tichborne case, p. 12.

exception; nay it is not even the exception, for not one such exception—that is the case of no two indiscernibles—can be produced. So far as I know, Leibnitz is the only philosopher of modern times who has noticed and duly emphasized this wonderful fact; for the statement of it is one of the fundamental axioms on which his whole system is founded. * * * The illustration he employed while discussing the subject in the presence of the Princess Caroline, as they were walking in a garden together, was that no leaves precisely alike could be found on any bush. Another gentleman who was present took up the challenge, but after a long search was obliged to confess that the statement of Leibnitz was probably correct. A better illustration, as it seems to me, might be taken from the human face. Here all the differences are crowded together within narrow compass, say within the limits of six by ten inches, and all the main features, brow, nose, eyes, cheek, mouth and chin, are constructed essentially on the same general pattern. But what a marvellous wealth of difference underlies all this uniformity! Among the many millions of human faces that people this earth, no two can be found so nearly alike but that they are easily distinguished at a glance."¹

§ 663. In an interesting case in Massachusetts, an effort was made to identify by the voice the burglars who had broken into the Northampton Bank. The cashier testified that he had been compelled by masked burglars to open the vault, and stated that he could identify them by the voice. To show that there was no peculiarity in his voice, the defendant Scott was then asked by his counsel to stand up and repeat something, which he did, and the witness said he was suppressing his voice. Scott was then told by his counsel to "speak it right out." The judge then said: "I do not think this is competent." The counsel for the defendants contended that he had a right to have the peculiarities of the defendants' voices pointed out by the witness, and that for this purpose the voices themselves were competent. The judge ruled that though identification could be by voice, experiments in court were inadmissible.²

§ 664. After death, the presumption of continuance of appearance rapidly weakens. Even when death is sudden, there is an immediate change of countenance; and we notice instantaneously not only the loss of expressions we associated with the living person, but the start-

¹ Princeton Rev., May 1880, p. 334.

² Com. v. Scott, 123 Mass. 222.

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ing forth of new expressions, constituting heretofore unperceived likenesses with other members of the same family. From that moment "the effacing fingers" of time work rapidly. There is but little continuity of appearance, and gradually all identification by expression is impossible. The eye, also, is gone; the mouth, even if the lips remain, retains no longer those undescribable yet unmistakable peculiarities which distinguished the individual when living. We must then fall back upon the more undefaceable portions of the frame: the size of the body, the shape of the skull, the indications the skeleton offers of age. The hair and the teeth, however, form the chief means of recognition. The hair is chiefly valuable in disproving alleged identity, as where gray hair is found on a body claimed to be that of a person whose hair at death was as yet auburn or black; and cases are known, such as those of Lucrezia Borgia and of Cromwell, in which identification was claimed by comparing hair taken from a body after death, with a lock taken a short time before death from the living person. But the chief mode of identification, when the features of the deceased have lost their shape, is by the teeth. Peculiarities as to the teeth, though by no means conclusive, since many persons may have teeth of the same kind, form admissible modes of identification. And proof of this kind is strengthened by artificial marks on teeth, produced by dentistry; and may be made still more cogent by the production of dentists' casts, and by the testimony of dentists by whom particular operations were effected.¹

¹ See generally on this topic *R. v. Cheverton*, 2 F. & F. 833; *Lindsay v. People*, 63 N. Y. 143; *Murphy v. People*, 63 N. Y. 590; *Foster v. People*, 63 N. Y. 619; *Hamby v. State*, 36 Tex. 523. For a case of identification of a head preserved in alcohol, see *State v. Vincent*, 24 Iowa 570. *Whart. Crim. Ev.*, § 326.

A brother of the deceased, on a trial for murder, testified that, five months after the alleged murder, he saw a body claimed to be the body of the deceased, and examined it; he testified to several points of resemblance. He was asked by the government whether it was, in his opinion, the body of the murdered man. It was held that the question was incompetent, the question being for the jury, the body having been much decomposed, and he having stated all the points of resemblance. *People v. Wilson*, 3 Parker C. R. 199.

In Lowenstein's case (Albany, 1874, p. 332), Judge Learned thus sums up the evidence of identity of the remains: "The question for you is, was that body John D. Weston's body? The facts are, first, that it was the body of a one-armed man; the same arm was gone in both cases. Another fact which the physicians testify to is the peculiar flexibility of the finger. There is some discrepancy as to whether it was the same finger in the body as with Weston, I think. The third peculiarity was the separation of the teeth; they were fur-

§ 665. In September, 1826, William Morgan, a man of roving habits, who had been connected with a Masonic Lodge in Western New York, quarrelled with his Masonic associates, and took part in the publication of a book in which their secrets were disclosed. This was resented by his old friends, and he was subjected, it was said, to persecutions, which were followed by his disappearance on September 12th, 1826. It was reported that he had been kidnapped; and the country was soon in a blaze of excitement. What became of him

ther apart than usual. That peculiarity is said to have existed in both. As to the size and mode of wearing a moustache, the man is said to be, I think, of such a size as to correspond with John D. Weston. Then you have the further fact about his coat, pantaloons, and vest, and I think the shoes and hat and the alpaca coat; they were all identified by John Weston's wife. You will remember if I am wrong in the details. She testified to shortening the pantaloons and to mending the coat. There is also a pair of eye-glasses which I think she identified. At any rate she says she fastened a similar pair to his suspenders."

In Goldsborough's case, reported in Warren's Miscellanies, Blackwood's ed. 1845, p. 93, the evidence was that the murder of Huntley, the deceased, was committed in 1839. The body was found in 1841, by an open drain. The chief point of identification relied on was a peculiar tooth which Huntley had on one side of his head. Only one-half of the bones of the supposed body were found, and none of the clothing was discovered. The skull was fractured and filled with dirt, and not a single particle of flesh or muscle remained. As to the tooth, Mr. Warren says (pp. 106-7) :—

"When first discovered, it would appear certain that there was a very prominent tooth on the left side of the lower jaw, which arrested the attention of all those who saw it; but soon afterwards, owing to the inconceivable carelessness and stupidity of those intrusted with the custody of such all-important articles, and who permitted every idle visitor to have free access to them, the tooth in question, alas, was lost! I confess I have seldom experienced such a rising of indignation as when this remarkable deficiency of evidence was thus accounted for."

"He," the judge, "left it fairly to them," the jury, "to judge whether sufficient had been done to satisfy them beyond all *reasonable* doubt that the bones produced were those of Huntley, but accompanied by a strong expression of his own opinion that the evidence was of an unsatisfactory nature. Unless they were satisfied on *that* head there was an end of the case; for the very first step failed, proving that Huntley was dead. If, however, on the whole of the facts, they should feel satisfied in the affirmative, then came the two other great questions in the case, Had Huntley been murdered? And by the prisoner at the bar?" The defendants were properly acquitted.

As to identification by teeth, see further, *Com. v. Webster*, Bemis's Report; *Lindsay v. People*, 63 N. Y. 143; *Morgan's case, infra*.

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was never known : the theory of one side was that the alleged abduction was a trick on his part to elude his creditors ; the theory, on the other side, that he was carried off by Masons and drowned in Niagara river. In a few months the anti-Mason party was organized so effectively that it controlled not only municipal but state elections in New York and Vermont, holding the balance of power in Pennsylvania. There was, however, no proof that Morgan had been killed, though this was the firm conviction of a majority of the community. In October, 1827, thirteen months after Morgan's abduction, the dead body of a man was found on the beach of Lake Ontario, forty miles east of Fort Niagara. There is now no question that this was the body of Timothy Monroe, a Canadian farmer, who had been drowned in that vicinity a few days before, in consequence of the upsetting of his boat. This was afterwards shown by physical signs : by his clothes, by intrinsic facts, and there was nothing about the body to indicate a struggle with violence such as would have been necessary to cast him against his will in the water. No proof, however, of identity being then produced, the coroner's inquest found the body to be that of a "person unknown." In the meantime a rumor was spread that the body was that of Morgan, and a second inquest was summoned, before which very extraordinary evidence was produced. The remains had been tampered with, the head and cheeks had been shaved, and a dentist was examined who produced two teeth he claimed to have extracted from Morgan's mouth, and which were said to fit into the mouth of the deceased. But confirmatory facts of this kind were not needed to back up the convictions of the numerous witnesses, who, under the strain of high party excitement, believed that they saw in the corpse the body of the murdered victim of Masonry. The second inquest found promptly that the body was that of Morgan, and this was followed by an immense funeral at Batavia, which was one of the most effective incidents in the political campaign. Not long afterwards, however, a third inquest took place. "There," so states a review of these remarkable proceedings in the New York Sun of May 16th, 1880, "were the widow of Timothy Monroe, his son, and the man Cron, who was with him in the boat when he was drowned. They had been induced to come from Canada. The clothing of the dead man, which had been nailed up in a box when he was first buried, was submitted to the three witnesses. They each and all recognised every article as Timothy Monroe's. The

wife, with great emotion, identified her mending and darning of some of the garments. The eking out of one leg of the trousers with a different piece of cloth, because the pattern, bought by the son, had been scant, was dwelt on by the son and his mother. A portion of the contents of the pockets were religious tracts in English typography, and bearing the imprint of the British Tract Society, such tracts as then were circulated only in Canada. All three testified to the drowned man's being full whiskered and heavily haired upon his crown. Then came the formal inquest at Batavia. All of the coroner's jury were anti-Masons except two. The jury sat in the midst of an immense concourse of people. Weed and his Morgan Committee were conspicuously absent. Monroe's widow, his son, and Cron positively identified the remains to be Timothy Monroe's. His clothing was identified by each of them. The tracts were put in evidence." The evidence of the dentist was met by the proof that the dead man had lost five of his teeth instead of two. "The Potters, father and son, proved that he was whiskered and not bald when found, and that when he was dug up, preparatory to the political inquest, he was whiskered, and not bald. The testimony was overwhelming. The verdict of the jury was unanimous." A pamphlet on this topic by Mr. Henry O'Reilly was published by the American News Company, in 1880.

§ 666. *Inspection*.—All instruments by which an offence is alleged to have been committed; all clothes of parties concerned, from which inferences may be drawn; all materials in any way part of the *res gestae*, may be produced at the trial of the case. Injury to the person may also be proved by inspection. Thus in an action to recover damages for an injury to a limb, the injured limb may be exhibited on trial, to be inspected by the court and jury, while the surgeon who was employed to set it testifies as to the injury.¹ In a North Carolina case,² the defendant, who was charged with murder, set up as a defence

¹ *Mulhado v. R. R.*, 30 N. Y. 370. In *Weiner v. State*, 66 Mo. 13, the bones of the deceased were exhibited in court for the purpose of illustrating his position at the encounter. As to inspection of remains in alcohol see *State v. Vincent*, 24 Iowa 570. *Whart. Crim. Ev.*, § 326.

² *State v. Garrett*, 71 N. C. 85. In *State v. Blair*, tried at Newark, N. J., October, 1879, before Depue, J., where the question was whether Blair, the defendant, shot Armstrong, his coachman, in self-defence, we have the following:

"Albert Honvidtz, of the sheriff's office (called for the prosecution), testified

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that the deceased was accidentally burned to death, and that she (the defendant) burned her hands in trying to extinguish the fire. She was ordered by the coroner to show her hands, which exhibited no trace of burning. Evidence of this was received on trial.¹ When the issue is infancy, on an indictment, the court and jury may decide by inspection,² and so when the question arises as to the color of a person.³ On an issue of bastardy, the jury may judge of likenesses that he had tried a number of experiments with a pistol on the same kind of stuff as that of which Armstrong's outer garment was made.

"The witness spread a piece of checked gingham before him and produced a pistol.

"'I tried the experiments,' said the witness, 'with the same kind of a pistol as that of Blair's in the court-house cellar. At nine different distances—close, and at $\frac{1}{2}$ an inch, 1, 2, 3, 4, 5, 6, and 12 inches.'

"The witness exhibited a cloth with a large ragged hole and a scorch of powder around it, and the others in succession. On each the mark of the powder-burn became less distinct as the distance of the range was increased. On the twelve-inch rag, as it may be termed, the powder-burn was scarcely perceptible.

"The purpose of this testimony was quickly appreciated by the defence. It was offered in anticipation of Blair's statement that he was engaged in a struggle with Armstrong at the time of the shooting, and wrested the rusty pistol from the coachman's grasp."

For the defence, Mr. Marsh, a lawyer in court, was called, and at the request of the counsel for the defence "personated Armstrong reaching forward for the pistol, one foot forward, and his back half turned to Mr. Blair. Judge Titsworth held the lawyer by the left shoulder, as Blair is supposed to have held Armstrong, and, with a pistol pressed against the lawyer's body, showed how Blair had shot him then in the back or the side." *N. Y. Evening Post*, Oct. 9, 1879. See *Brown v. Foster*, 113 Mass. 136.

Even an article proved to be of the same pattern as one the subject of litigation can be produced before the jury, to illustrate the nature of an injury by or to such article. *American Express Co. v. Spellman*, 90 Ill. 455.

In *State v. McCafferty*, 64 Me. 223, the jury were permitted to take with them a bottle of ale which was part of the same manufacture as that which was the subject of the trial.

But experiments by a jury, on articles not committed to them, and in the absence of the parties, vitiate the verdict. *State v. Saunders*, 68 Mo. 202.

Magnifying glasses may be used in the inspection of documents; *Hatch v. State*, 6 Tex. Ap. 84; and of jewelry: *Shoot v. State*, 63 Ind. 376

¹ See, however, *Stokes v. People*, cited *Whart. Crim. Ev.*, § 313.

² *State v. Arnold*, 13 Ired. 184. See, however, *Ihinger v. State*, 53 Ind. 251, in which it was held error, on an indictment for selling liquor to a minor, to permit the jury to determine age by inspection.

³ *Warlick v. White*, 76 N. C. 89; *Garvin v. State*, 52 Miss. 207.

by inspection;¹ and so on an issue of adultery, for the purpose of connecting a child with a putative father.² It is inadmissible, however, to resort, on such issues, to the inspection of pictures.³ On an issue of pregnancy, a jury of matrons is empanelled to decide the issue by inspection.⁴

§ 667. When, however, more exact proof can be produced, inspection does not afford a sufficient basis on which to rest a judgment. Thus, in Indiana, where, under a statute, it was necessary to prove that the defendant was fourteen years old, it was held that in a case open to doubt this proof must be, if possible, supplied by witnesses or records, and cannot be determined by inspection alone.⁵

· § 668. *Pictures and photographs.*—The admissibility of photographs and pictures is discussed at large in another work, and it is there shown that they are admissible for the purpose of identification.⁶

Pictures and photographs are constantly employed for detective

¹ *State v. Woodruff*, 67 N. C. 89. See *State v. Britt*, 78 N. C. 439.

² *Stumm v. Hummel*, 39 Iowa 478; but not on an issue of seduction as part of proof against the alleged seducer. *State v. Danforth*, 48 Iowa 43; citing *Kensington v. Rowe*, 16 Me. 38; *Rink v. State*, 19 Ind. 152.

³ *Beers v. Jackman*, 103 Mass. 192.

⁴ Baynton's case, 14 How. St. Tr. 630; *R. v. Wycherly*, 8 C. & P. 262. And see *Whart. on Ev.*, 8th ed., § 312, from which the above is taken.

⁵ *Stevenson v. State*, 28 Ind. 272; *Ihinger v. State*, 53 Ind. 251.

In Tennessee, in a case tried in 1859, *Stokes v. State*, 5 Baxter 619 (see Alb. L. J., May 6, 1876), where the prisoner was indicted for the murder of a female by hanging, the evidence was, that, near the place where she was hanged a track was found in the mud, made by a bare foot. The prosecution sought to show that this track was made by the foot of the prisoner, and brought a pan of mud into court and placed it before the jury—it being proved that the mud was about as soft as the mud where the track was seen. The prisoner was then called upon by the prosecuting attorney to put his foot in the mud but refused. The court charged the jury that this refusal was not to be taken against the prisoner. The defendant was convicted, but the court on appeal reversed the finding on the ground that the circumstance had an influence on the jury prejudicial to the prisoner. The court said: "Such testimony should be promptly rejected, and not permitted to go to the jury at all, for jurors with minds untrained to legal investigations and discriminations are sometimes likely to be influenced thereby, although such incompetent evidence may be afterwards withdrawn."

Experiments not applicable to conditions existing on the trial cannot be proved by experts. *Hawks v. Claremont*, 110 Mass. 110; *Com. v. Piper*, 120 Mass. 185.

⁶ *Wh. Cr. Ev.*, §§ 544, 805.

purposes.¹ A capital conviction is reported by Mr. Wills to have been secured by the prisoner having given his portrait to a youth, which enabled the police, after watching a month in London, to recognise the culprit.² And the utility of photographs both of persons, of things, and of documents, has been established in numerous cases.³

§ 669. In Ruloff's case, Potter, J., said: "It is the every-day practice to use the discoveries in science to aid in investigation of truth. As well might we deny the use of the compass to the surveyor or mariner; the mirror to the truthful reflection of images; or spectacles to aid the failing sight, as to deny in this day of advanced science the correctness, in greater or less degree depending upon the perfection of the machine, and the skilful admission of light to the photographic instrument, its power to produce likenesses; and upon the principle, also, that a sworn copy can be proved when the original is lost or cannot be produced, this evidence was admissible."

§ 670. "During the mayoralty of the Hon. John M. Scott, in 1842-43, rough pen and pencil sketches were made of the countenances of the prisoners the remembrance of whom it was thought desirable to perpetuate. Of these there now remain on file, etc., sketches of twelve individuals; this may be considered as the first approach towards the formation of a Rogues' Gallery; these have been found useful in a number of instances. During the administration of Mayor Gilpin from 75 to 80 daguerreotypes, and ambrotypes of noted men in police annals were made the nucleus of a gallery, though kept in a trunk under lock and key most of the time. They were seldom exhibited to others than officers of the detective department of police. With the present administration the gallery of photographs commenced, and has been carried forward to its present condition, numbering now (April 24, 1860) 266 portraits. It has been thought desirable, in furtherance of police ends, to add, as far as possible, the portraits of men, notorious in other cities, but who occasionally visited us professionally. Exchanges have been made to some little extent with New York, Albany, Pittsburgh, etc., and pictures received have been hung up in our gallery. As it regards the *pictures* of men known to the police as rogues of a high grade, very few of

¹ Wh. Cr. Ev., §§ 544, 805; 3 Parker C. R. 401; 18 N. Y. 179; 45 N. Y. 213.

² Wills, Circum. Ev. 95.

³ Wh. Cr. Ev., §§ 544, 805.

these, as yet, are known to exist, in any portion of the land. Generally, these men will *not*, under any consideration, sit for their portraits. When in custody, and are therefore secure, the question is often asked, How do you get the consent of these men and women to sit and have their likenesses taken to be hung up for general exhibition? The answer is, Sometimes by threats of thirty days' imprisonment, as the alternative of refusal; at others, and in most cases, the parties have been arrested for the commission of some crime, and, having years of imprisonment before them, are reckless and regardless of consequences, so far as their pictures are concerned, and yield readily to the demand therefor. The greater portion of the pictures in our gallery are the pictures taken under these circumstances; and, therefore, for any practical purposes, are by the writer deemed almost useless—especially so with regard to the younger portion of them. They alter so materially in person, etc., as often to be hardly recognised after years of imprisonment.

The one great idea, it was said, “in the establishment of a Rogues’ Gallery, should be to enlarge the acquaintance of detective officers with individuals with whom they have to do, and thus to give the officers greater facilities in the performance of official duty.”¹

§ 671. *Extrinsic tests.*—When a person very strongly resembling the accused was seen in the neighborhood of the alleged crime, it is very strong evidence of identity.² Evidence of proximity, and that of presence as inferred from it, may sometimes be made out by physical facts, such as the impression of boots of a peculiar kind, afterwards discovered to be the same as those of the prisoner.³

Impressions from other parts of the body answer likewise a useful purpose in detecting and identifying an offender. In the case of *Rex v. Brindley*,⁴ impressions were found on the soil, near the scene of crime, of the knee of a man who had worn breeches made of striped corduroy, with a patch of peculiar shape, which was found to correspond exactly with the dress of the prisoner.⁵

§ 672. In a case that came before the New York Court of Appeals, in 1865, it appeared that the plaintiff in error had been indicted for

¹ Memorandum by officers in Philadelphia Mayor’s Office in 1843.

² On this point see Wh. Cr. Ev., 8th ed., § 27.

³ Wh. Cr. Ev., § 796.

⁴ Wills, Circum. Ev. 100.

⁵ See Wh. Cr. Ev., 8th ed., § 796.

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the murder of Owen Thompson, and tried and convicted in the lower court ; after which the case came before the Court of Appeals on exceptions to the judge's charge. The case against the prisoner was that the deceased was killed opposite a cattle yard, leased by the prisoner only the day previous, and that there was taken from the deceased's person his pocketbook and a large sum of money ; that the last time the deceased was seen alive was in company with the prisoner, that the day following the murder the prisoner disappeared from the place where the murder was committed, that he was poor and destitute for a long time previous and up to the time of the murder, and that he was possessed of a large sum of money the night after the murder. Other circumstances appeared in evidence against the prisoner, such as having made false representations, etc. The prisoner introduced no evidence to prove his whereabouts on the day of the murder, or how he came into possession of the money. The judge charged the jury, "That when it is in the power of a party, if he is not the man, to show where he was on that day, at some time of the whole day, and he living in a place where he is well known, that which before may have been regarded as highly probable ripens into certainty ;" also, "He has had abundant opportunity, also, of showing where he got that money ; but he has not done it. Circumstantial evidence of this sort, when left unexplained, if in the power of the prisoner to explain if not true, becomes of a *conclusive character*."

The Court of Appeals held this charge to be erroneous ; "that it was unnatural and illogical, and fatal alike to innocence and guilt." The true rule of law in such cases is, that an absence of an attempt to account for the person's whereabouts, when it appears to be in his power to do so, is not, in law, conclusive of the facts in dispute, but is strong inferential evidence against him.¹

§ 673. Whenever any physical connection exists between something belonging to the prisoner and traces of the criminal at the scene of crime, identification may be established by actual comparison. In the case of footprints, this is done by fitting the feet or shoes of the party to the impress which they left. Footprints, or impressions made by instruments used by the person committing a crime, may aid in identification in two ways : *first*, by showing the quarter from which the criminal came immediately before the crime, or to which he went

¹ *Gordon v. People*, 33 N. Y. 501.

directly after it; *second*, as specially pointing out the guilty person.¹ Marks of violence, such as impressions of instruments used in forcing the way into a house, show that the perpetrator came from without. The absence of any such traces may lead also to the inference that the criminal was an inmate of the house. Evidence of the peculiar manner in which an instrument of crime was used, may contribute material aid in fixing guilt upon a particular person. Where the evidence shows that a fatal wound has been inflicted by the left hand, for example, and the accused is found to be left-handed, this circumstance, although, of course, not conclusive, lends great force to other indications. Objects left at the scene of crime, which are found to belong to the prisoner, are evident means of identification. A connection, also, between something found at the place of the crime, and something in the prisoner's possession, may here be mentioned. Where the bullet, for instance, with which a murdered man was killed, fits exactly a fire-arm in the prisoner's possession, or where the wadding of a gun corresponds to wadding found with the prisoner, strong evidence is afforded of identification.

§ 673. In 1868, a man, in all probability an escaped lunatic, named Heasman, was found in a cupboard of a house in Hackney, England, dead. Great publicity had been given to the circumstances attending the discovery of his body, and the result was that a crowd of persons, most of them bringing photographs, visited the dead-house to see if the features corresponded with those of missing friends. Among the visitors was Dr. Ellis, Medical Superintendent of St. Luke's Hospital, who recognised the body, showed that the clothes were those of a patient in St. Luke's, and declared that the name of the deceased was Heasman—the name of a patient who had recently escaped from the establishment. The name on the stockings worn by deceased corresponded with this statement. On the following day the brother of the deceased confirmed the physician's view. But strong evidence was produced to the effect that the corpse was that of another person. An engineer who had recently lost a friend, produced a photograph very like the deceased; and another, Mrs. Mary Ann Banks, positively swore that the body was that of her husband, Mr. Ebenezer Charles Banks, a commercial traveller. She adhered to this statement

¹ Wh. Cr. Ev., § 796. Whether a defendant can be compelled to submit his person to inspection has been much doubted. The question is discussed in Wh. Cr. Ev., § 315. As to footprints, see further, *infra*, § 853.

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upon oath in the Coroner's Court, her two sisters partially supported her, and she has one strong circumstance in favor of her statement. Before she had seen the body, she described a particular wound upon the little finger, which wound appears to have been found. But notwithstanding this strong proof, the great preponderance of evidence was that the body was that of Heasman.¹

¹ "The interest felt in the case, an interest out of all proportion to the importance of the facts, reveals a curious doubt which is always latent in the public mind, and which has, we suspect, as much justification as popular instincts usually have, a doubt whether appearance *is* conclusive, or even strong evidence of identity. The doubt is probably based upon tradition, which deals much in stories of mistaken identity, but we are inclined to believe it much more solid than either policemen or artists would be willing to allow. A large proportion of ordinary persons, it may be even a majority, but certainly a very large proportion, are very untrustworthy witnesses to identify when dependent on appearance alone. They are, either from nature or habit, incapable of appreciating form, and form alone is the unerring proof of personal identity. The difficulties in the way of identification, more especially of the dead, are to them insuperable. In the first place people are much more similar than we always remember. Without excepting or disputing the extraordinary idea which exists in so many countries, and is the basis of so many fables, that every man has his "double" somewhere, an individual absolutely identical in appearance with himself, it is quite certain that the most extraordinary likenesses do exist among persons wholly disconnected in blood; that there are faces and forms in the world which are rather types than individualities, people so like one another that only the most intimate friends and connections can detect the difference. The likeness of Madam Lamotte to Marie Antoinette is a well-known historic instance, and there are few persons who have not, in the course of their own experience, met with something of the same kind. The writer has twice. In one case, he was on board a ship in which were two passengers, who neither were, nor by possibility could be, connected by birth or any circumstance whatever, except, indeed, caste. Oddly enough, they were unaware of a likeness which was the talk of the ship, dressed in the same style, but from some inexplicable repulsion—we are stating mere facts—disliked and avoided one another. The writer, in a six weeks' voyage, and with a tolerably intimate acquaintance with one of the two, never succeeded in distinguishing them by sight; and of the remaining passengers, certainly one-half, say thirty educated persons, were in the same predicament. In the second instance, the evidence is far less perfect, but sufficient for the argument we are now advocating. The writer stopped short in Bond street utterly puzzled by the apparition of one of his closest connections, not two yards off. Clearly it was he, yet he could from circumstances by no possibility be there. Still it was he, and the writer advanced to address him, when a momentary smile broke the spell, leaving, however, this impression: 'I would have sworn to Blank in any court of justice. His double must be walking about Bond Street.' The likeness was really

§ 674. *Objections to evidence identifying dead bodies goes not to admissibility but to weight.*¹—From what has been said here, and in

astounding, quite sufficient to have deceived any number of policemen unacquainted previously with either man.

"The writer has a faculty for likeness, or a stupidity about identities. That is a plausible, though an erroneous explanation, and it brings up just the point we want to make. Is it not just possible—it is rather a serious supposition, when our criminal procedure is considered—but is it not just possible that something like color-blindness affects this matter of identification—that there is a large number of persons, whose evidence upon any question of identity, though perfectly honest, is worthy of very little trust—that men upon this, as upon most other matters, are guilty of an unconscious carelessness, like that which makes testimony about figured statements so often valueless? We are all apt to think that we observe faces very carefully; but it is quite certain, more certain than almost any assertion of the same kind, that we do not so observe them. We are also apt to believe that the difference in faces is very great, is radical, and not dependent upon accidental features, yet it is almost certain that no such difference exists; that men are in reality as nearly alike as animals appear to be. Take, for instance, in evidence of both these propositions —of the carelessness of our usual glance, and of the similarity among men—a fact which a number of our readers can test for themselves. No man, on landing at an Indian or Chinese port for the first time, can, for a few days, tell one man from another. The natives are more decisively unlike than so many Englishmen, because, in addition to every other distinction, their complexions cover a wider range of color; but, being similarly dressed, they seem for a few days as much alike as so many sheep, who are all alike to a Londoner, but among whom a shepherd or a dog makes no mistake. Now, if men were much unlike, more unlike than the sheep are, no such curious haziness would be possible; nor would it be, if the observer were unconsciously in the habit of studying the form and character of each face. He has, as a rule, no such habit; but, unless an artist or a policeman, relies unconsciously on accidental circumstances, color, hair on lip or chin, gait, expression, or peculiarity of some one feature, and should that by any accident disappear, he is utterly puzzled. One-tenth at least of Western mankind is, consciously or unconsciously, short-sighted, and never *sees*, in any true sense of seeing, any face whatever; never quite catches its *nuances* of expression; never is quite sure about its minor features; never quite ceases to idealize according to a preconceived theory of character. Even of those who do see perfectly, a large proportion are not artists; never catch the specialty of the face they are looking at enough to caricature it—some faces will not submit to caricature, Lord Derby's, for instance, and Mr. Gladstone's, in both of which the caricaturist invariably intensifies the whole expression—and really recollects it mainly by its accidents of color, or the like, accidents which may disappear in life, and do disappear in death. It is not easy to recog-

¹ See Wh. on Cr. Ev., § 805.

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the chapter in which the physiological bearings of this question are discussed, it will be seen that evidence as to the identity of dead

nise the photographs of men whose appearance depends on color; and death does its work in destroying color even more perfectly than the sun. Fatness and thinness, too, are great aids to recognition; yet they are temporary, dependent sometimes on mere accidents of health. We have all of us met friends whom we have not seen, say for three years, who have grown wider, if not wiser, in the interval, and whom we should not, without speech, have recognised. Death, as a rule, while it leaves much unchanged, absolutely destroys every distinction, based either upon color or upon fatness, and modifies thinness in the most unexpected way, revealing unsuspected depths about brow and mouth, while leaving the cheek untouched. No child is recognisable in death by mere acquaintance, because in children's faces the prominent points are color and contour. An actor cannot change his real face, but only the accidents of the face; yet Mr. Webster, for example, has once or twice deceived his audience for some minutes, and could, we suspect, deceive them, if that were his object, altogether.

"Think again, of the excessive difficulty with which the memory retains a face. Portrait painters of half a century's standing will tell you that they hardly retain the impression of a sitter five minutes, though they have been studying him keenly; that their own first touches from him as he sits are invaluable helps; that they would all, if it were convenient for art reasons, like to keep a photograph in full view for their work when the original is away. We think we remember, but in five minutes we forget the half of a friend's face nearly as perfectly as we forget the whole of our own. Clearly, if identification were as easy as we are apt to believe, we should not so forget faces. And their expression? Doubtless, expression, being, so to speak, an intellectual rather than a physical fact, stirring and rousing the intellect of the observer, his secret and almost instinctive likes and dislikes, remains longer fixed in the mind than mere feature. The witness who arrested Judge Jeffreys might have forgotten his face, did forget it, in fact, for Jeffreys, when seized, had only changed his wig, but he could not forget the ferocious glare of those insufferable eyes. But expression changes quickly, may change permanently. We all say, every now and then, 'His face quite changed,' while nothing is changed except, perhaps, the expression and the color. Madness, extreme anger, drink, will all change a well-known face till it is almost irrecongnisable: and though, no doubt, it requires a combination of circumstances to deceive a wife as to her husband's identity, still there is one expression which, in a case like that of Haekney, she has never seen, and that is death, of all influences the one which may most modify expression, both by altering the set of the features, and changing the emotional medium through which we regard them. No doubt there are faces so marked and so individual, so completely isolated from any type, and so independent of accident, that it is almost impossible they should ever be forgotten or mistaken. It would have been nearly impossible for Sir Thomas More to disguise himself, and we question if Dr. Newman or Mr. Tennyson could abolish

bodies is to be carefully scrutinized, and is not entitled, if resting simply on resemblance of features, to be regarded as sufficient to sustain a verdict. But this operates not to exclude such testimony, but only to diminish its credibility. Thus, in a case in Iowa, where a man had been murdered and the head severed from the body, and was by a physician preserved in alcohol, many witnesses were called to identify it. The prisoner proposed to prove, by two witnesses, who were physicians and surgeons, and whose knowledge and attainments in their profession made them familiar with the natural changes through which a human body must necessarily pass after death, that on account of such natural and inevitable changes, it was not possible for any one to identify the head. The court properly refused to permit the evidence of the physicians to go to the jury. It would have been competent, so it was declared, for the witnesses to have stated the nature and character of the changes in the human body produced by death, within certain periods of time, and to have explained to what extent these changes had operated upon the head of the deceased, and to have stated their usual and necessary effect, according to the laws of nature. The progress of decay, the distortion and discoloration of the features, and the consequent change or destruction of the peculiar expression of the countenance, by which human faces are usually distinguished and identified, as shown by the head in question, would have been proper facts for the witnesses to have pointed out and explained to the jury. But the fact of such changes existing cannot be used to exclude the testimony of witnesses seeking to prove such identity; nor could the experts be permitted to testify to a conclusion of fact, to make which was the proper function of the jury.¹

the expression of eye and brow sufficiently to baffle recognition; and there are artists, and as the public believes detectives, who would recognise any face under any disguise. But the majority of men trying under changed circumstances to recognise ordinary faces from their memories of features alone liable, we feel convinced, to self-deceptions as extraordinary, and yet as natural, as that we may charitably attribute to Mrs. Banks, or that which prompted the evidence against the marine so nearly hung for his share in the recent Manchester *emeute*.”—*London Spectator*.

As to other cases of identity, see *infra*, §§ 778 *et seq.* As to production of body, see *infra*, § 781 *et seq.*

¹ *State v. Vincent*, 24 Iowa 570. See further on this topic Wh. Cr. Ev., §§ 804-5.

§ 675. *Sex*.—A curious question of dispute as to sex arose in the case of D'Eon, who represented the French court in Russia and in England during the reign of Louis XV. This remarkable person, although for years occupying a diplomatic position as a man, claimed, when his official duties in England closed, to be a woman. A post-mortem examination, however, showed that he was a man.¹ When detached portions of a skeleton are produced, it is to be observed that the general osseous development is greater in men than in women; in two persons of equal weight, according to Autenrieth, the proportions being 8 to 10. The skull of the female is a little smaller than that of the male, while the facial portion is usually shorter and slighter. Its bones are also thinner, the forehead is lower and narrower, the frontal sinuses and all the foramina smaller, the orbits comparatively larger, and the buccal and nasal cavities less capacious than in man. The thorax is shorter and narrower than in the male, and the difference is particularly marked in the upper part; the clavicles are less bent, and the shoulders are lower and narrower, the arms and hands shorter, and the fingers more delicate and pointed. The bodies of the lumbar vertebræ are higher, and the invertebral substance thicker than in the male skeleton. The ribs are shorter, thinner, and flatter, and have sharper edges than in the male, and have also other peculiarities, which it is not necessary to dwell upon. The most striking difference, however, is in the pelvis; the hip-bones being more widely apart, and all the diameters of the true pelvis, both of its entrance, cavity, and outlet, being greater than in man; the sacrum is more concave, the upper border of the symphysis pubis is inclined more forward, and the arch of the pubis is wider. On account of the greater width of the pelvis the hip-joints are further apart than in the male, although the trochanters are smaller: the neck of the femur forms an angle of 120°–125° with the body of the bone, while in the male it is from 127°–135°; the femur is shorter, more bent, and directed obliquely inwards, and the tibia is also shorter, and the bones of the feet smaller and more delicate.²

¹ See Broglie's *Secret du Roi*, Paris, 1878; *Gentleman's Mag.*, May, 1877.

² Dr. Jno. Neill found, upon an examination of thirty-two skeletons, that the *thyroid foramen* in the *male* is oval, and in the *female* triangular. He also observed that the male foramen is longer and narrower, and that the long axis is nearly parallel to the rami of the pubes and ischium; whereas in the female, the foramen is not only smaller and triangular, but the apex of the triangle is

Some of these differences are not so striking in the skeletons of females advanced in life, but the essential characters of the pelvic bones remain and are sufficient to indicate the sex.¹

§ 676. *Fractures, deformities, and peculiarities in the dead body.*²—Dr. Taylor relates an instance in which the utility of evidence of this kind was shown. A gentleman was tried in India for the murder of a native. It was stated that the prisoner had struck the deceased, a few hours before his death, several blows upon the chest and had thereby broken his ribs. A skeleton was produced as being that of the dead man, and upon examination it was found that one of the ribs had been broken, but that it was united by a firm osseous callus. Hence the opinion was very properly given that the fracture could not have been caused a few hours before death, but must have taken place from another cause some time previously. The period at which callus is fully formed after a fracture depends somewhat upon the age and constitution of the individual; it is usually, however, several weeks before it is sufficiently firm to bear the weight of the body, when one of the long bones of the lower extremity has been broken. Gunshot and other penetrating wounds of the skull are generally identified by the form of the opening and the sharp and broken character of the edges. Sometimes a portion of the weapon or the ball is found in the head. The absorption of bone made by the pressure of a tumor is recognised by the loss of substance around the opening and its smooth and polished character, and the previous existence of necrosis can also be readily known by its diffusion around the orifice and in other parts of the skull.

In 1814, portions of a human body, having been found floating in the Seine, was taken up and submitted to a medico-legal examination. The body was identified from the fact that disease of both hip joints was found, which must necessarily have caused considerable deformity and lameness, since it was evidently of old standing, new cavities having been formed above the acetabula, in which the heads of the thigh-bones rested. The assassin was afterwards discovered.³

downward, its internal side nearly parallel to the rami, and base of the triangle is proportional to the chord of the arch of the pubes.—*Trans. Coll. Phys. of Phil.*, vol. iii. No. 2.

¹ Krause, *Handbuch der Menschl. Anat.* 2 Auff., Bd. 1, p. 225.

² See on this topic, *supra*, §§ 620 *et seq.*

³ Rriand, *Méd. Lég.*, p. 586.

§ 677. In those cases in which certain portions only of the human body are found, or in which all appear to be present, though in a dismembered condition, the preliminary step to the identification depends necessarily upon the ability of the examiner to so adjust the parts together as to be certain that they naturally formed parts of one body. This has been successfully done in many remarkable cases, as in the one just quoted; in the case of Ramus, where the head was found in the Seine, the trunk in a sewer, and the legs near the Pont-Neuf; and in that of Dr. Parkman,¹ where the remains of the bones of the head were found in a furnace, and the thorax and limbs concealed in different localities. In the last case, the head having been almost entirely consumed, nothing remaining but a few fragments of bone, there could be no clue to identity from the features; but, it having been found that the other portions of the body could be adjusted to each other in such a manner as to prove that they had once constituted a whole, a presumption of identity was established from the computed stature, certain peculiarities of form, the presence of gray hair upon various portions of the body, and, finally, from the block of mineral teeth, which, as before stated, fitted the mould of the jaw of the deceased, as previously taken by a dentist.

§ 678. *Cicatrices.*—The indelible marks upon the skin which are left by wounds, cutaneous diseases, and surgical operations, afford frequently valuable means of identification. The tissue of which the scar is formed is of a dense and fibrous nature, and it is distinguished from the surrounding skin by its whiter color, and the absence of hair and sebaceous follicles. When not distinct, it can often be brought out by friction, which reddens the adjoining skin, but does not affect the scar. Some have, however, a red or purplish color, especially those which are the result of eruptions depending upon a constitutional cause, as syphilis or scurvy. The *shape* presented by cicatrices is very various. A *linear* cicatrix is the result of a simple incised or punctured wound, which has healed by adhesion. But all incised wounds do not leave scars of this shape. They are sometimes curved or elliptical, owing to the retraction of the skin, or to the wound having been inflicted upon a convex surface. Whenever the injury has been attended with loss of substance, the healing process must necessarily take place by granulation, and the scar will be

¹ Guy's Forensic Medicine, 3d ed., p. 24. As to production of body, see *infra*, § 1118.

irregular in shape. *Gunshot wounds*, when a bullet has been the projectile, leave a *round* and *sunken* scar, which is usually much smaller than the ball, if no efforts to dilate the wound have been made, and it is also adherent to the subjacent parts. If the shot has been fired close to the individual, the grains of powder will also sometimes penetrate the skin, and give it a tattooed appearance. A round scar is sometimes also left by a penetrating wound from a weapon with a rounded or triangular blade, but it has not the sunken appearance left by a gunshot wound. The cicatrix which results from the healing of a scrofulous or syphilitic sore has considerable similarity to that made by a ball. If the scar has resulted from a scrofulous abscess in the gland, the appearance of it is peculiar. Its shape is more angular than round; it is traversed by adherent bridles of skin, and is therefore uneven and fenestrated, although its surface is shining, smooth, and white. When it is seated on other parts of the cutaneous surface it is not so deep, except it has become adherent to a subjacent bone, and resembles in its smooth and enamelled surface very much that which is left by a burn. Those which are caused by *syphilitic* ulcerations are irregular in shape, are puckered, hard, often elevated, and more or less of a copper color. The position of these cicatrices will often, moreover, give a key to their origin, being usually seated over the lymphatic glands. The cicatrices resulting from burns are too familiar to need description.

§ 679. The question may arise as to the possibility of the *disappearance* of a scar. We believe that, as a general rule, all scars resulting from wounds and from cutaneous diseases, which involve any loss of substance, are indelible; the only exception that can be made being in regard to trifling punctured wounds, where but little violence has been done to the skin. Casper says,¹ "Scars occasioned by actual loss of substance, or by a wound healed by granulation, never disappear, and are always to be seen upon the body. But the scars of leech-bites, of lancet-wounds, or of cupping instruments may disappear after a lapse of time that cannot be more distinctly specified, and may therefore cease to be visible upon the body. It is extremely difficult or impossible to give any certain or positive opinion as to the age of a scar." *Tattoo* marks are also usually considered indelible.² This is not the opinion of Dr. Casper who in a trial at Berlin, where

¹ *Tor. Med.*, vol. i., p. 104.

² As to tattoo marks, see *Tichborne case, supra*, § 287.

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the question came up, stated, as the result of his inquiries made among the old soldiers at the invalid hospital in that city, that the marks of tattooing can disappear.¹ The evidence, however, was not, we think, of sufficiently precise a character to warrant this statement. "Out of 36 examples, the marks had become faint with time in 3, were partially effaced in 2, and completely obliterated in 4." Hence, for the actual previous existence of these last he had to depend upon the word of the person whom he examined. Moreover, the age and the substance with which the operation was effected are not reported. no doubt the pigment used is often partly absorbed, since the lymphatic vessels leading from the spot have been found filled with it, but better evidence of its complete disappearance is yet required before the well-established belief of the contrary can be shaken.

§ 680. Hutin² has confirmed the opinions expressed by Casper, and Tardieu³ has also shown, by his investigations, that in a large number of cases, more especially those in which cinnabar or blue ink has furnished the pigment, the marks may entirely disappear, so that we transcribe without hesitation Casper's dogma, "that tattoo marks may become perfectly effaced during life; that in not a few cases they disappear, so that they are no longer visible on that body when dead, on which, during life, witnesses had often seen them, and that their existence at a former period may possibly be ascertained by an examination of the neighboring lymphatic glands."⁴

§ 681. Hair.⁵—The inferences of identity from hair are affected by the following considerations. (1) Hair becomes gray as time advances, and sometimes, on some great shock, the change may be immediate. (2) " Certain diseases, will, at times, affect a great change in the color of hair. The hair of children darkens as they grow older."⁶ (3) Dyes may operate unconsciously or consciously. In particular manufactures, e. g. those of ebony and indigo, the hair of workmen may acquire a greenish hue, while a bluish-green tint is not uncommon in the hair of

¹ Casper's *Vierteljahrsschrift*, 1852, 1 Bd. 2 Heft (Der Processe Schall eine cause célèbre); and see the conflicting evidences in this case in the Tichborne case, 1872.

² *Récherches sur les tatouages*, Paris, 1853-8.

³ Ann. d'Hygiène publique, Janv. 1855, p. 175 *et seq.*

⁴ Casper's *For. Med.*, vol. i. p. 109.

⁵ As to hair, see Wh. Cr. Ev., § 779, and cases cited, *infra*, § 776 *et seq.*; *supra*, §§ 304, 637.

⁶ Tidy, *Leg. Med.* 1883, p. 205.

copper smelters. Light hair may by dyes be made dark, and dark hair, though with more difficulty, be made light; even the golden tint being produced by peroxide of hydrogen. Dyes, however, may be generally detected by want of uniformity, and by the new hair at the root being different in color from the body of the hair. And steeping the hair in a solution of nitric acid will bring out the original color.¹

A curious case, illustrating the possibility of a fraudulent decolorization of the hair interfering with the identification of a person, is reported by Orfila.

A man named Benoit was arrested on suspicion of murder. Some witnesses testified that they had seen him in Paris at two in the afternoon, with black hair, while others declared that *they* saw him at Versailles, with fair hair, at five or six in the evening of the same day. The question being proposed whether it was possible to change the color of the hair from dark to light, Orfila deposed that it was. He made numerous experiments to show this, from which it resulted, that by washing the hair with solutions of chlorine, black hair could be changed to various lighter shades, according to the strength of the solution, and the length of time it remained applied. This mode of decolorization can, however, readily be detected by the peculiar smell of the chlorine, and by there being something unnatural in the color resulting from its application. He found also that the most effectual way to darken hair naturally light was by the employment of a compound of litharge, chalk, and fresh lime in nearly equal parts. After the hair which has been wetted with a solution of these materials has become dry, the chalk and oxide of lead remaining attached to the hair are removed by weak acetic acid, and cleaned with the yolk of an egg. The hair is thus effectually dyed black, without any injury to its texture. The fraud can, however, easily be detected by steeping some of the hair in dilute nitric acid, which dissolves the ingredients with effervescence, and, on testing the solution with hydrosulphuric acid, the black sulphide of lead will be obtained. Such cases can, however, very seldom come before courts

¹ "The color of the hair may be altered by dyes. * * * Any hair on which evidence has to be given, should first of all be thoroughly washed with water and its color and tenacity in this condition recorded. Afterwards a portion should be digested in nitric acid, and the said liquid be tested for silver, bismuth and lead. The color of the hair after treatment with acid should again be taken note of." Tidy, Leg. Med. (1883), p. 146.

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of justice, this being, as far as we know, the only instance in which, since the ancient union of the functions of the barber and the surgeon, they have been again combined.

Whether hair is human is a question as to which the preponderance of authority is, that no standard opinion can be laid down as universally applicable. It is true that, as has been said, "if the thin cortical substance of the human hair, marked as it is more than that of any other mammal, by fine transverse lines with an axis band of spheroidal cells, be compared with the peculiarly shaped hairs of other animals, it will be at once apparent that very little difficulty can arise in the majority of cases to prevent our forming a positive opinion whether a hair is human." It is added, however, that "occasionally the hairs of some of the lower animals—for example, those of a brown dog—present a remarkable similarity to human hair."¹ And it is said that while hairs from different parts of the body have their characteristics, "the medical jurist should exercise the greatest possible caution in speaking dogmatically as to the precise locality from which hair submitted for examination was derived."

The color and peculiarities of the hair may, in many cases assist in the identification of the dead, but it is not unimportant to remember that in those cases where the body has been exposed to the vicissitudes of the weather for some time after death, the hair becomes bleached by the exposure, and thus hair which was really dark during the lifetime of the deceased may present a tawny appearance.

An expert witness may testify as to peculiarities of hair, but will not be permitted to put himself in the place of the jury and testify that certain hairs came from a certain person.²

§ 682. *The length of time which has elapsed since death*, as ascertained from an inspection of the remains of the human body, can seldom be known with great precision, and in many cases, especially at a late period in the process of decomposition, many errors may be committed. The rapidity of this process depends upon a great variety of circumstances, and the influence of these it is therefore of some importance to consider.

The age and constitution of the person, his last sickness and mode of death, the existence of wounds, the length of time the body has remained exposed to the air before interment, and the temperature

¹ Tidy, Leg. Med. (1883), p. 205.

² Knoll v. State, 13 Cr. Law Mag. 546.

and hygrometric condition of the air at this time, the nature and depth of the ground, if the burial has taken place, and, if not, the nature of the medium in which the body has remained, must, with other conditions, all be considered in any estimate of the time that has elapsed since death.

§ 683. *Heat*, especially when accompanied with humidity, is a powerful accelerating cause of putrefaction. Dry heat, if the temperature is elevated, does not promote it. Thus, the bodies of those that have perished in the caravans that traverse the African deserts, are often found in a dry and mummy-like condition. Even in temperate climates corpses interred in very dry vaults, as in the Catacombs at Rome, the leaden vaults of Bremen, the convent of the Capuchins at Toulouse, a church at Bordeaux, etc., remain in a tolerably perfect condition, very much resembling the Egyptian mummies.

§ 684. In March, 1850, a workman engaged in repairing a Rumford fireplace found, in the hot-air chamber, the body of an infant which had been introduced through an opening made by the removal of two bricks. The body was mummified. During the preceding years four tenants had successively occupied the apartment. On examining the remains, M. Bergeret, to whom this duty had been judicially assigned, found within them a large number of bodies as large as a grain of wheat, dry, friable, open at either end, and of a mahogany color. These were the shells of the nymphs which produced the insects, the larvæ of which had devoured nearly all the abdominal organs. These nymphs were found in great numbers about the mouth and neck of the body. The interior of the limbs was filled with larvæ, or maggots. Now the succession of these transformations is as follows: The female fly lays her eggs, from which in due time the larva, or maggot, issues, and is after a time transformed into a nymph, or chrysalis, which is inclosed in a sort of case or shell, and from which the perfect insect ultimately escapes. A year is necessary for these metamorphoses. The eggs are laid in the summer and their changes result in the reproduction of the insects at the commencement of the following summer. Now the eggs which produced the larvæ found in the body in March, 1850, must have been deposited in the summer of 1849. But the body also contained a number of empty nymph cases which must in their turn have been preceded by larvæ produced by eggs laid in 1848. Hence it was concluded that

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the death of the child had taken place in the summer of 1848, and consequently that no suspicion could attach to the persons who had occupied the room since that date. The inquiry having thus received a definite direction, a female who lived there apart from her husband, at the time indicated, was arrested, and a variety of circumstantial evidence rendered it certain that she had been pregnant and delivered of a child about that time. She was, however, acquitted of the charge of infanticide, on the presumed ground that there was no proof that her child had not died a natural death.¹

§ 685. In very cold climates, bodies may be preserved for a long time. This is the case in some parts of Norway, where persons dying in the winter are not interred until the spring, the ground being frozen too hard to permit burial, and the corpse is preserved uninjured for several months. The body of Prince Menschikoff, banished to Siberia by Peter the Great, was found ninety-two years afterwards entirely unchanged. In the beginning of this century, the thawing of large masses of ice on the banks of the Lena left exposed the body of a mammoth, which was in such a state of preservation, that the flesh was eagerly devoured by dogs, bears, wolves, etc. The corpses which are preserved at the hospice on the top of Mount St. Bernard, where the thermometer stands nearly the whole year round below the freezing point, are recognisable after the lapse of several years.²

¹ Annales d'Hygiène, 2ème sér. iv. 442.

² There is upon the summit of the great St. Bernard, a sort of morgue (*dead-house*), in which have been deposited, from time immemorial, the bodies of those unfortunate persons who have perished upon this mountain by cold, or the fall of avalanches. The study of the circumstances of locality and of temperature in which this establishment is placed, may, to a certain degree, indicate the most favorable conditions for the long preservation of bodies. Thus are shown to travellers bodies which they assert have been sufficiently well preserved to be recognisable after the lapse of two or three years. A physician, whose position as former Prosecutor of the Faculty of Medicine of Paris rendered him curious to visit this part of the hospital in all its details, verified, with his own eyes, all that travellers have written, and has transmitted to us the following observations:—

“The hospital of St. Bernard is, as is well known, the most elevated habitation of Europe, being 7200 feet above the level of the sea. The temperature of this part of the globe is always very low, rarely above zero, even during summer. This extensive establishment is built upon the borders of a lake, at the bottom of a gorge in the mountain; the principal mass of the building represents a long parallelogram, placed in the direction of the gorge, so that its two

§ 686. The *air*, at its ordinary temperature, favors the progress of putrefaction. In bodies which are exposed for a long time to all the changes of weather, it is estimated that all the soft parts are completely destroyed in less than six years, and most of the bones in twelve, as they become light, brittle, and honeycombed in their appearance.

§ 687. *Water*, being a natural constituent of the human body, is also one of the elements necessary for the progress of decomposition. If, however, the body be sunk in water, putrefaction does not advance so rapidly as in the air, and often the changes which take place are different from those of ordinary decomposition. The soft parts of the body may become converted into a substance called, by Chevreul, *adipocere*. It is solid, white, and fusible. The ammonia which

principal faces, pierced with numerous windows, are sheltered from the wind by the rocks; whilst the two extremities, on the contrary, are exposed to all the violence of those which blow from one side of the gorge to the other. About fifty steps beyond the principal building, and a little out of a right line with it, is situated the morgue, a sort of square chamber, the walls of which are three or four feet thick, constructed of good stone, and the arched roof of which is very solid. Two windows, about four feet square, are pierced in the direction of the breadth of the valley, directly facing each other, so that a perpetual current of cool air traverses the interior of the chamber. There is, further, but a single table in this morgue, upon which they place the bodies when first introduced; after a while they are arranged around the wall in an upright attitude. At the time of my passage of the Great Saint Bernard (31st August 1837), there were several of those mummified bodies along the walls of the chamber, but a greater number were entirely divested of flesh, and lay scattered about the earthy floor of the room. They informed me that decomposition only took place when the bodies fell by accident to the ground, which was owing to the humidity occasioned by the snows, which occasionally entered with the currents of air through the windows of the morgue."

Dr. Harlan says: "Early in September, 1833, I had an opportunity of inspecting the contents of the morgue of Saint Bernard. Among the group of bodies of every age and sex, we were particularly struck with two figures, one, that of a man, whose countenance was horribly contorted by the act of desiccation; each limb and every muscle of the body had assumed the expression of a wretch in purgatory. The other was that of a mother holding her infant to her bosom, the latter with an imploring expression, looking up to the face of the mother, whom it appeared to have survived some time, as is generally the case when mother and child are frozen together, a greater power of forming animal heat existing in children." (History of Embalming, etc., by J. N. Grannal. Translated from the French by R. Harlan, M. D., Philadelphia: Judah Dobson, 1840.)

§ 688] IDENTIFICATION OF THE LIVING OR DEAD. [BOOK IV.

results from the decomposition of the muscles, as well as a certain quantity of potash and lime, form a combination with the oleic and margaric acids of the fatty portions of the body. The bodies of children, and of stout, fat persons, undergo this change most readily. But the presence of considerable moisture is necessary for it, and it therefore occurs only in the water, or in moist soils, especially where many bodies are buried together. It is uncertain at what time this saponification takes place in the water; according to Dévergie's observations, it is pretty complete in five months. In the ground, the process is much slower, requiring at least three years for a total transformation. A remarkable example of this change observed in New York is reported by Dr. Dalton.¹

§ 688. *Soil.*—The dryness or moisture of the *ground*, the depth at which the body is buried, and its more or less complete isolation from contact with the earth, are circumstances which modify the progress of putrefaction, and render any general opinion as to period of death inapplicable. The body of Numa Pompilius was preserved in a stone sarcophagus for several centuries; and the bones of Dagobert, who died nearly twelve hundred years ago, were found entire, having been placed in a wooden coffin inclosed in a stone tomb. The bones of Abelard and Heloise were so well preserved, after a lapse of five hundred years, that the female skeleton could be readily distinguished from the male.² On the other hand, the body of a child buried in the earth has been found reduced to the mere bones in nine months; and that of a young man, who died of smallpox, in less than six.³ In general, observation has shown, that of the body of an adult, buried in an ordinary coffin, nothing at the end of twenty years will remain but the skull and the thigh-bones, sometimes also the arm-bones; and Schürmayer states, that in general, in churchyards, the time will not exceed fifteen years. In order to show, however, how little dependence can be placed upon the uniformity of these changes, the following case will serve as an example. A skeleton was found, in digging the cellar under an old house. A question arose whether the individual to whom it belonged had died more than twenty years

¹ New York Journ. of Med., Nov. 1859, p. 375. *Supra*, §§ 620 *et seq.*

² Blumenbach, Geschichte, u. Beschreibung der Knochen, etc., Göttingen, 1807.

³ Joh. Miller, Knochengerüste des Menschen, etc., Henke's Zeitschrift, 1852,

before. Soon afterwards other skeletons were found near by, and finally, an investigation having been set on foot, the fact was clearly made out that the site of the old house had formerly been a burial place, and that the skeleton was at least 200 years old.¹

§ 689. *Other conditions.*—Casper gives the following valuable rule, which, taking his own experience as a criterion, he thinks will not be far from the exact truth. “At a tolerably similar average temperature the degree of putrefaction present in a body, after lying in the open air for one week (month), corresponds to that found in a body after lying in the water for two weeks (months), or after lying in the earth in the usual manner for eight weeks (months).”²

§ 690. The following general results have been obtained by Orfila, whose celebrated treatise, *Sur les Exhumations juridiques*, contains nearly all that is accurately known on this subject:—

1. Putrefaction is, under equal conditions, more rapid in manure than in water, privy soil, or the ground.
2. In privy soil it is not so rapid as in water, but more so than in the earth.
3. Water, especially when frequently renewed, accelerates decomposition next in rapidity to manure.

§ 691. Dr. Walter Lewis, who was engaged for many months in the years 1849 and 1850, in inspecting the vaults of the churches of London for the General Board of Health, states, among many other interesting facts, which are not here in place, the following, relative to the time for decomposition in vaults: “The complete decomposition of a corpse, and its resolution into its ultimate elements, is by no means accomplished in a period of ten years; nor is that description accurate which represents, that at the end of that period nothing ‘but a few brittle bones are left in the else vacant shroud.’ On the contrary, so extremely slow is the process, under the circumstances, that I have but rarely seen the remains in a leaden coffin, of any age, in the condition described. In a wooden coffin, the remains are found exactly in this state in a period of from two to five years. This period depends upon the quality of the wood, and the free access of the air to the coffin. But in leaden coffins, fifty, sixty, eighty and even a hundred years, are required to accomplish this. I have opened a coffin in which the corpse had been placed for nearly a century, and the ammoniacal gas formed dense white fumes when brought into con-

¹ Miller, *ante*.

² For. Med., vol. i., p. 37.

tact with hydrochloric acid gas, and was so powerful, that the head could not remain near it for more than a few seconds at a time. The putrefaction is, therefore, very much retarded by the corpse being placed in a leaden coffin."¹

§ 692. *Different organs affected differently.*—In estimating the period that may have elapsed since the death of a person, it is very important to be acquainted with the fact that the process of putrefaction is not equally rapid in all of the organs, but that it invades them successively, and, for the most part, in a determinate order. There are tissues, says Casper,² which require from twenty to thirty times as long as others to become putrid, and the relative condition of certain internal organs in this respect affords a surer basis than that of the superficial parts for making a probable conjecture as to the period of death. This author presents the results of his observations, of which the following is a concise summary :—

§ 693. Of internal organs the trachea with the *larynx*, is the first to undergo decomposition. Its lining membrane may be completely softened when greenish spots are only beginning to appear upon the surface of the abdomen. The *brain* of children within the year follows next in order. The *stomach* soon becomes putrid. The earliest traces of this change are visible in from four to six days, in the fundus of the organ, and consist of dirty reddish spots varying in size from mere specks to that of the palm of the hand, without regular shape or limits, and traversed by bluish venous streaks. The importance of this fact in cases of suspected poisoning is very evident. As time elapses the dirty red color diffuses itself and gradually changes to a grayish-black tint, and in the same proportion the softening of the submucous tissues proceeds. In no case, says Casper, have I met with a separation of the mucous from the muscular coat, such as follows the action of a caustic poison, and which could not be distinguished from the merely emphysematous disintegration of the mucous membrane produced by putrefaction alone. Putrefaction of the *intestines* follows that of the stomach and passes through the same stages. In the majority of cases the *spleen* is next in undergoing decomposition ; but this depends upon its greater or less degree of soundness. It grows softer and softer, so that at last it may be

¹ *Lancet*, Aug. 9, 1851.

² *Handbuch der Ger. Med.*, i. 51.

readily broken down with the handle of the scalpel. Its color turns to a pale bluish-green.

§ 694. The *omentum* and *mesentery* resist change somewhat longer, especially if they contain but little fat. They then become dry and grayish-green in color. Usually the *liver* continues firm for some weeks after death. It changes more rapidly in new-born infants than in adults. The alteration begins upon the convex surface with shining green spots, which gradually invade the whole organ and change its color to coal-black. The gall-bladder resists longer. Next in order of change is the *brain* of adults. It gradually contracts after death. Putrefaction begins at its base, giving the parts a pale greenish color, proceeding upwards, and from the cineritious to the medullary substance. In moderate weather the brain becomes soft in two or three weeks, but a month elapses before it is converted into the reddish paste into which the brain of infants so speedily turns. If air has access to it, these changes occur more rapidly.

§ 695. The preceding organs may be associated as quickly putrefying. The following are more slowly changed. Even after the stomach, intestines, liver, etc., are far gone in putrefaction, the *heart* appears fresh, and all its parts are recognisable. Gradually it softens, first in its internal muscles and then in its walls, becoming soft, greenish, and finally black. About the same time as the heart, but sometimes earlier, the *lungs* undergo decomposition. In bodies which externally are far advanced in putrefaction, the structure of these organs is commonly very evident. This remarkable slowness of putrefaction in the lungs proves how little practical foundation there is for the notion that in the bodies of new-born children, otherwise fresh, the floating of the lungs in water can be ascribed to decomposition of their substance. The first evidences of this change consist in small collections of air beneath the pleura from the size of a millet-seed to that of a bean. They may form on any part, but as the process advances, they become more numerous, especially upon the posterior surface of the lungs. Notwithstanding the development of these vesicles the color of the organs is very slowly altered. As putrefaction advances they become darker, of a bottle-green and finally of a black color, and in the same degree the parenchyma grows soft and collapses. The *kidneys* putrefy still later, first assuming a chocolate color and then softening. But their granular structure is very long retained. The *bladder* does not begin to decay

until complete putrefaction of all the above-mentioned organs has taken place.

§ 696. The *œsophagus* in this respect does not at all resemble the rest of the digestive canal, and it is found months after death moderately firm, and in color a dirty grayish-green, when no trace of stomach and intestines remains. As regards the *pancreas*, for a long time it remains of a dirty reddish color, and when it becomes decomposed the rest of the body must have utterly gone into putrefaction. The *diaphragm* is one of the parts which yields the latest to this process. It is true that within a few weeks after death it is spotted with green; but after the lapse of from four to six months its muscular can be distinguished from its tendinous portion. The larger *blood-vessels*, and the *arteries* especially, change very slowly. Dévergie mentions a case, in which the aorta of the body exhumed fourteen months after burial was perfectly distinct. The *uterus* is, however, of all the organs the one which retains its form and texture the longest. When not another organ is in a condition suitable for examination, the uterus remains tolerably fresh and firm, of a dusky red color, and so well preserved that it may be cut and its interior examined. These statements are not less applicable to the female foetus and new-born infant than to the adult. A case is related by Casper of a woman whose body was found in a privy well nine months after she had suddenly disappeared, reports having meanwhile become current that she had concealed herself or been murdered by a certain person, otherwise of good repute, to avoid the discovery of her pregnancy. Her remains were in the last stage of putrefaction, all except the uterus, which was of a light red color, hard when handled or cut, and presented all the characters of a virgin's womb.

§ 697. *Putrefaction in the foetus.*—The foetus, dying within the uterus, undergoes a change which is different from the putrefactive process. The body is remarkably flaccid in all its parts, and if it have died previous to the fifth month, it will often, after having undergone a certain degree of maceration, wither, contract, and become hard, principally upon the surface, exactly as if it had been preserved in a weak saline solution. In the latter months, however, its tissues soften and lose their cohesion, the skin has a spotted appearance, and, when the cuticle is detached, has a brownish-red color. The abdomen is usually bare of the cuticle, which is, however, easily

detached from all parts of the body. The head lies flat in whatever position it may be placed, and all the joints are extremely relaxed. The umbilical cord is of a brownish-red color, and very flaccid. The cellular tissue is infiltrated with bloody serum, and the cavities of the body contain the same liquid. The viscera are disorganized, easily lacerated, and very loosely connected with each other; gas is developed in the lungs and liver, and the kidneys and uterus are usually better preserved than any other parts. The lungs are of a dark-brown color, and punctated with black blood. The odor is peculiar, but not that of putrefaction, unless the child has been born after a lingering labor, and air has had access to it. The child which dies immediately before birth will not, of course, present these appearances. When the foetus has been retained a long while in the womb, it is said that it may be converted into adipocere. This is not unfrequently the case with extra-uterine foetuses. There is no difference in the putrefaction of children born alive, from that of adults, except in the greater rapidity of its progress. In order to determine the length of time which may have elapsed since the birth of the child, with a view to its identification when it is found in a putrid condition, recourse must be had to the same sources for an opinion as those already indicated, viz., the locality, temperature, medium, etc., to which it has been exposed, or in which it has lain.

§ 698. *Influence of lime upon the putrefactive process.*—The belief is a very general one, that lime has the property of hastening the process of decomposition, and it is usually with this view that it has been thrown upon human remains which it is attempted to rapidly destroy. Upon the trial of the Mannings, in London, for the murder of O'Connor, medical evidence to this effect was given; the advanced stage of putrefaction in which the body was found being attributed to the action of the lime, and, in particular, the destruction of the brain, to the fact of this substance having penetrated through the wounds of the head, and thus exercised a direct action upon it. But more attentive observations and careful experiments have shown that it does not possess the property thus attributed to it. The following conclusions were drawn by Dr. Taylor, from some experiments made for the purpose of ascertaining the effects of lime upon animal matter:—

1. Lime neither retards nor hastens decomposition in dead bodies, whether whole or in fragments.

2. It has, however, the effect of hindering the diffusion of noxious effluvia from the dead body, from its combination with carbonic acid, sulphuretted and phosphuretted hydrogen.

3. Lime is therefore one of the best, safest, and cheapest means of preventing the effluvia from dead bodies.

4. The belief, therefore, that it hastens the putrefactive process, is entirely groundless.¹ The experiments of Mr. John Davy² confirm these conclusions. He placed various structures of the bodies of animals in wide-mouthed vessels, and covered them with a paste of freshly prepared caustic lime; at the end of a month they were found perfectly well preserved, although somewhat softened. Even seven months afterwards, they were found nearly in the same condition. At the end of two years, certain changes had taken place. The membranous portions were soft and transparent, the muscular tissue was converted into adipocere, but had no offensive smell, and the other structures were no longer recognisable. In other experiments of the same kind, it was found that the lime was destructive only to the hair, nails, and epidermis; and that in animal tissues which were already beginning to putrefy, the immersion in fresh lime destroyed all foul smell, and brought the process to a standstill. The green color which the muscular tissue receives from contact with lime, is ascribable to a chemical action of this substance upon the coloring matter of the blood contained in them.

¹ Henke's Zeitschrift, 41, E. H. p. 294.

² Edinb. Month. Journ., Jan. 1850.

CHAPTER III.

MEDICO-LEGAL EXAMINATIONS.¹

§ 700. The physician who is called upon to make an examination of a person found dead under suspicious circumstances, has devolved upon him a task of no little gravity. He therefore should endeavor to come to it prepared to acquit himself of his duty in such a manner

¹ The subject of medico-legal examinations in insanity has been already noticed, vol. i., §§ 32, 268, etc. The legal relations of experts will be hereafter noticed, *infra*, §§ 890 *et seq.* In addition to the cases already mentioned, we may here cite the following:—

On the trial of an indictment for selling unwholesome meat, it was held that physicians might be allowed to testify that the eating of unwholesome meat does not always cause apparent sickness, and to state their opinion, founded on what other witnesses had testified, as to the disease of which the cow died, and whether the disease would cause fever, and whether the flesh of animals sick of fever was unwholesome. Goodrich *v.* People, 3 Parker R. (N. Y.) 622. That experts may be examined as to a hypothetical case, see Wh. Cr. L., § 417. That the hypothetical case must be relevant, see People *v.* Bodine, 1 Denio 288; Guetig *v.* State, 66 Ind. 95. Muldowney *v.* R. R., 39 Iowa 615; see also, Wh. Cr. L., §§ 403 *et seq.*

Physicians who are not experts in analytical chemistry are admissible to form an analysis of the contents of the stomach in cases of poisoning. State *v.* Hinkle, 6 Iowa 380. That chemists may be examined as to poisons, see Wh. Cr. Ev., § 413.

If a surgical witness testify as an expert, he may, having examined a wound, give his testimony as to the nature of the instrument which inflicted it (State *v.* Knight, 43 Maine 11), and as to whether such wound was adequate to the production of death. (Livingston's Case, 14 Grattan 592.) And surgeons may be examined as to the nature of a wound and its probable cause and effect, Wh. Cr. Ev., § 412.

Evidence of scientific persons in a capital trial, as to the distinction between the appearance of stains of human blood and those of animals, is admissible. State *v.* Knight, 43 Maine 11. But the better opinion is that it cannot be now proved beyond reasonable doubt that certain dried blood is human. Wh. Cr. Ev., § 777 *a.*

Maps and diagrams may be used by scientific witnesses, to render intelligible their verbal testimony. Wh. Cr. Ev., § 545. State *v.* Knight, 43 Maine 11.

that he will afterwards not have to regret having imperfectly discharged it. Not only is familiarity with anatomical dissection required, but there is need of peculiar carefulness and a wider scope of observation, in view of the fact that the relations of inculpated parties to the deceased are to be considered. Hence an examiner must turn his attention to any extrinsic facts which may throw light upon the mode of death, such, for instance, as the position of the body in relation to surrounding objects, and the locality in which it was found. The duties of the examiner, and the facts necessary to observe, may be arranged under the following heads :—

- I. Locality, § 701.
- II. Identity, § 702.
- III. Indications of violence or unnatural death, § 703.
- IV. Manner of conducting the autopsy, § 704.
- V. Natural aspect of the organs at different ages, § 706.
- VI. Mode of drawing up reports, § 716.

§ 701. *Locality*.—The chief points for notice under this head are those which, by indicating the situation in which the body is found, may afford a clue to the detection of the manner in which it came there. Thus in cases of infanticide an accurate description of the locality in which the child's body is discovered is of great importance in the subsequent investigation of the mode of death.¹ Or, a person may be murdered and the body afterwards transported to a considerable distance for concealment, or the deceased may have had sufficient strength after receiving his mortal wound to follow the steps of the assassin, and yet finally perish at a point more or less remote from the place where he was attacked, and where the indications of a struggle will be found.

§ 702. II. *Identity*.—This subject we have treated in detail in the preceding chapter. It is only necessary to state here that the knowledge of the identity of the deceased in cases of recent death, is as far as the medical evidence is concerned, secured by a careful notice of the clothing, the stature and apparent age, physical development, deformities, color of the hair, eyes, etc., scars, marks of tattooing and peculiarities indicating the habitual trade or occupation.²

¹ Wh. Cr. Ev., § 327, *infra*, § 860.

² See on this topic cases noticed in Wh. Cr. Ev., §§ 326, 804. As to tattoo and other marks, see *supra*, §§ 287 b, 301, 636, 643.

§ 703. III. *Indications of violence or unnatural death.*—All indications of a struggle in the vicinity of a body should be carefully observed, such as traces of blood, fragments of clothing or hair upon the ground, and anything that may have served as a weapon, or been the accidental cause of death.¹ The hands of the deceased should be carefully examined; if they hold a weapon it should be noted whether it is loosely or firmly grasped, and also if there are portions of hair or clothing contained in them.² In cases of poisoning, the vial from which the poison was taken may be found in the hands or pockets, or lying near the deceased; and in other cases, when poisoning is suspected, the room in which the body is found should be carefully searched for poisonous substances, or for vessels which may have contained them.³ If wounds are discovered upon the body, their nature and extent must be ascertained, and, if, lacerated, incised, or punctured, the weapon, if any is found, carefully compared with them.⁴ The examiner should not omit to ascertain whether there are any fractures or dislocations present, and whether any foreign bodies are to be found in any of the natural openings of the body. In the case of females, in addition to the above, the signs of recent or previous delivery (as elsewhere detailed) must be observed, and the vulva should be examined for traces of injury which might otherwise go unnoticed.⁵

¹ Wh. Cr. Ev., § 778.

² Ibid. § 776.

³ Ibid. §§ 787-90, *infra*, §§ 776 *et seq.*

⁴ Ibid. §§ 771 *et seq.*

⁵ In *State v. Malley*, which was tried in New Haven, in June and July 1882, and in which there was a verdict of acquittal, the following facts, to adopt the condensed statement in the Boston Advertiser of July 7th, 1882, were put in evidence.

Early on Saturday, August 6, 1881, the body of a young girl named Jennie Cramer, the daughter of a New Haven tobacconist, was found floating in shoal water near Kelsey's wharf at Savin Rock, on the Sound, in West Haven, about five miles southwest of New Haven. Two young men named Malley, cousins, residents of New Haven, together with Annie Simmons, *alias* Blanche Douglass, were charged with the murder. The indictment averred death by poisoning. The prosecution, to support this, put in evidence the following facts: There were no marks of a struggle having taken place; the deceased's limbs and features were not convulsed, but were placid; the eyes were closed; there was no water in the stomach or lungs, such as the ordinary struggles of drowning would be apt to furnish; and the usual frothing at the mouth was lacking. The defence, relying on the medical evidence of Dr. Jewitt, of New Haven, and Dr. Harris of Boston, argued that drowning was to be inferred from the presence of bloody mucus in the throat, and from a quantity of reddish fluid or serum in the pleural cavities. There was also a quantity of sand in the oesophagus or

Inferences drawn from the tenacity with which a weapon is grasped or a position adhered to depend upon what is called the *rigor mortis*,

gullet, and the gullet, unlike the trachæ or windpipe, is a closed tube, except in the act of swallowing, which, it was alleged indicated drowning. The defence, also, urged that the absence of the usual symptoms, relied on by the government, could be explained by the negligence of the parties in charge who left the body for hours in a hot sun (thereby evaporating the water), carting it for miles with no regard to its position, and by other facts which suggest a *draining* out of any water originally in the body. Bruises appeared, it was admitted, on Miss Cramer when found ; marks and discolorations on her forehead, shoulder, nose and ear ; the brain was slightly congested. There was also an absent rail on Kelsey's wharf from which, it is claimed, the body might have drifted to the spot where it was found. It was suggested by the defence that Miss Cramer fell (or threw herself) from this pier, and died by concussion in the shallow water ; and that this explained the lack of frothing and convulsed rigidity, the bruises, the absence of water in the stomach, and the presence of sand in the gullet.

To establish poisoning by arsenic Professor Chittenden, a professor of chemistry and toxicology in the scientific school of New Haven, testified that arsenic was well distributed throughout the body, except the bones ; the distribution was peculiar, an unusual percentage being found in the brain, a thing not true of white oxide or other insoluble forms. From that circumstance, and from the fact that arsenic is rapidly eliminated from the system, the inference was drawn by the professor that the arsenic was probably taken or administered within twenty-four hours of the death, and in an easily soluable form (probably Fowler's solution—arsenite of potash colored by tincture of lavender). He found additional evidence of this in the fact that had the powder been used, the microscope would have revealed the particles, a thing which it failed to do. Upon the supposition that arsenic was distributed through the body in the same proportion as in the parts selected, the system would have contained over three grains, under favorable circumstances a fatal dose. Dr. Pudden, a professor in physiology in the medical school in New Haven, testified that if the figures and results of Professor Chittenden's analysis were true, the death in his opinion was by arsenic.

Suicide was the hypothesis of the defence. It was shown that in consequence of Miss Cramer having been away from the house a night before her disappearance, she had been told by her mother that she might be obliged to find another home, and that her father had treated her roughly. It was alleged, also, that the amount of arsenic discovered in the body was not enough to explain death. To account for its presence at all, they suggested (1) that the deceased was in the habit of eating arsenic for her complexion ; (2) that the undertaker put it there, having previously purchased a preserving lotion called " Washburn's Wash," (the antiseptic element of which is arsenic), proper care not being taken to keep the body and the lotion apart. A further point in the same direction was this : the poison could not have caused death for the reason

a condition of stiffness and rigidity, which begins a few hours after death, and continues in summer for from twenty-four to thirty-six

that it had not effectively acted on the system. "All poisons are neurotic or irritant; they act either on the nerve centres of the brain and spinal ganglia or by the shock of a caustic action which gradually affects vital organs. Arsenic is an intense irritant. It has, it is true, in rare cases, a neurotic action by the paralyzing influence of an enormous dose, from which the system cannot rally. But in the vast majority of cases, arsenic is an irritant and acts by burning. The entire mucous membrane, from the gullet through the stomach to the intestines is vividly and intensely inflamed. Indeed, the membrane resembles most closely the appearance of a piece of raw beef. Now of all this, in Jennie Cramer's case, there was absolutely not a symptom. The contents of the stomach were also intact, showing that there had been no vomiting. If this dose of arsenic caused death, say the defence, it caused it by a novel action of the best known poison."

Motives for suicide there were in abundance. The girl, it was alleged, had been seduced and probably deserted. On the other hand there was shown no adequate motive that could have induced young men of means, as were the defendants, to incur the terrible risks of assassination. The proof connecting the defendants with the deceased during the last day of her life was conflicting; and there was no evidence showing that the defendants had given her poison, or explaining how her body had reached the water. Strong proof, also, in way of an *alibi*, was introduced. The great point against the defendants was the fabrication on their part of testimony; but this by itself was insufficient to sustain the prosecution.

"Admitting it, then, a suicide, was it by drowning or poison? It is difficult to say. If the poison did not act, she certainly was drowned—the turning point in the action of the arsenic. If the poison caused death and the Malleys were at hand, the pressing need of doing something to remove inculpatory evidence might have suggested putting the dead or dying girl into the water—the closed eyes and arms folded across the breast rather suggests it. If Jennie Cramer used arsenic as a cosmetic it would explain everything except the absence of arsenic from the bones—not a conclusive objection. The arsenic might have been there by an incident of the beautifying process. But a more reasonable hypothesis, considering the amount found, would then be this: that, familiar with the use of arsenic, having it at her command, the unfortunate girl in her desperation took a dose which she regarded as fatal; that in a system habituated to the use of arsenic the normally fatal dose failed, on the well-known principles, to act in the usual manner; and that, impatient of unexpected delay and goaded by the horror of her situation, she endeavored to complete her work, as is so often noticed in suicidal cases in another way; that, mistaking the depth of water under Kelsey's wharf, she fell from a height into shallow water and died by concussion, breathing but slightly, if at all."

hours, and in winter from thirty-six to forty-eight hours¹. The *rigor* begins usually with the jaw and neck, passes from thence to the chest, and then attacks the lower extremities, though the upper and lower extremities in some cases stiffen simultaneously. With infants and aged persons the *rigor* sets in sooner than it does with persons of middle age, but is much less marked and less continuous than it is with persons of greater strength.

§ 704. IV. *Manner of conducting the autopsy.*—The examining physician, according to the rules laid down by Casper, should be attended at the examination by one or more assistants, the duty of one of whom should be to write down the observations as they are dictated to him. The exterior of the body should be examined, if possible, before it is moved from the position in which it is found, and, in case circumstances permit, it is better that the examination should be made on the spot, than that the body should be transported elsewhere. The time elapsed since death should be approximately estimated by a consideration of the state of rigidity or flaccidity of the body, and the degree of putrefaction. The order in which the internal organs should be examined admits of some variety, although on the whole it is better, where time and circumstances allow, to commence with the head, and proceed therefrom to the other organs in regular succession.

To open the cranium, according to the same authority, the best method is to begin by making an incision vertically from the root of zygomatic process to that of the other; a few strokes of the scalpel will loosen the attachment of the scalp to the pericranium, and by a slight effort the two flaps may be inverted, the one over the face, the other over the occiput. After removing the temporal muscles from their attachments, the cranium may be opened speedily and safely by the saw, which should be used first on either side and then behind and in front. A chisel used carefully as a lever will then easily detach the calvarium. In young children a pair of strong scissors will suffice to cut the bone, with less risk of injuring the subjacent parts. A triangular block with rounded edges, placed under the neck, will much facilitate these operations. The integrity of the calvarium having been first noted, we then proceed to the examination of the contents of the cavity of the head. The dura mater may be divided

¹ This is Dr. Tidy's view, Leg. Med. (1883), 70. Taylor, however, fixes the usual period as varying between twenty-four and forty-eight hours.

around the edges of the skull, and then, being cut free from its connection with the *crista galli*, thrown over the occiput. The other membranes, after being examined *in situ*, may be observed with reference to their connections when the brain is itself examined. This should be done partly in and partly out of the cranium. The upper half should be removed on each side, by a horizontal incision which shall leave the thalami optici untouched while it lays open the lateral ventricles. Placing the fingers of the left hand under the anterior lobes of the brain, the remainder of the encephalon should be removed by cutting successively through the nerves, the tentorium, and the medulla oblongata as far as the knife can conveniently penetrate. The various parts may be then examined by successive horizontal sections made regularly in parallel planes. The state of the sinuses should also claim attention.

Previous to the examination of the *neck*, so it is further stated, the block should be removed and the head thrown back, in order to render the neck tense. An incision is then made in the trachea, and prolonged carefully upwards, with the precaution to hold the knife in such a manner as not to injure the posterior wall of the trachea or larynx. This done, the tongue, if it seem necessary, may be taken out by an incision following the inner circumference of the lower maxilla, and by dividing the posterior pillars of the fauces. The examination of the neck should not, however, be commenced until the cavities next to be examined have been prepared for inspection. A longitudinal incision, commencing at the top of the sternum, may be made and extended to the pubes, and a transverse one passing across the abdomen and intersecting the first at the umbilicus. These incisions should not penetrate more deeply than through the skin.

The *abdominal cavity*, it is then said, may now be opened by carefully dissecting in the epigastric region until the peritoneal cavity is reached; through the hole thus made, two fingers of the left hand may be introduced, and holding the edges of the incision stretched apart, the incision may be prolonged by the knife in the other hand down to the pubis, without injury to the intestines. The transverse incision is then made through the muscles, and the four flaps thrown back. Grasping the upper flap on the side on which the operator stands, and drawing it tensely back over the margin of the costal cartilages, an incision should be carried along the edge of the thorax

a sufficient distance in order to separate the abdominal muscles from their attachments. The dissection should now be continued upwards, in order to expose the sternum and cartilages as far up as the clavicle, and laterally exposing an inch or two of the ribs. The same operation is to be repeated upon the opposite side. In case of wounds passing through any portion of the parts thus noticed, they should be first circumscribed by circular incision, and thus isolated, so that their relations with the subjacent parts can be known.

It is not advisable, so it is maintained, to use much force in cutting through the cartilages of the ribs, on account of the risk of wounding the lungs or pericardium. The best plan is to begin with the fifth or sixth rib, and divide first those which lie below on each side; then taking hold of the fragment attached to the sternum, to divide the diaphragm between the two incisions of the costal cartilages and these up to the clavicle. In order to separate the sternum from the clavicle without wounding the large veins, take hold of the lower part of the sternum with one hand, and follow the articulation with the scalpel; *i. e.*, make the incision upwardly and outwardly, and then inwardly, The thoracic and abdominal cavities being now laid open, it is optional with which to begin.

The examination, according to Casper, should begin with the *thorax*. Having observed the relative position of the organs and of such of their qualities as may be judged of by the eye alone, the pleural cavities should be explored. In order to remove the lungs without injury, the safest mode, especially where pleural adhesions exist, is to detach the costal pleura—an operation which can be easily, although it must be slowly, done. In this way we preclude entirely the possibility of lacerating the pulmonary substance, and have subsequently no doubts to contend with as to whether certain lacerations of substance are the result of disease, injury, or our own mismanagement. The lung is less easily handled when separated from the body, than when it is left with its natural attachments. It is, therefore, always better in the beginning at least, after having drawn it out and laid it upon the thorax, to preserve its connections. Its roots may be afterwards divided, if it should be necessary to make a minute and protracted investigation. An incision, which will lay open as great a surface as possible of the interior of the lung, is to be preferred, and this is one commencing at the apex and dividing it completely through to its base. Afterwards, incisions at right angles with the

first one will most probably reveal any structural disease or injury that may exist. The bronchia should be laid open with an appropriate pair of scissors, and an examination of the bronchial glands should not be omitted. The *pericardium* should be opened in such a manner as to prevent the escape of the fluid contained within it until its quantity and character have been first ascertained. The examination of the heart for the purpose of detecting diseased structure need not here be dwelt upon. If gunshot or other wounds be found in its substance, their direction, extent and character must be carefully examined, and search made here, or in the pericardial or pleural cavities, for any foreign bodies, such as balls, wadding or fragments of weapons.

§ 707. In the examination of the *abdomen*, where poisoning is suspected, it is advised that the stomach and duodenum should be each separated by double ligatures, and removed, with their contents, from the body, for subsequent anatomical and chemical examination. In this case they should be put into perfectly clean vessels of porcelain, glass or wood, and without the addition of any preservative liquid. The vessels should then be closely sealed and put away in a secure place. In other cases these organs may be opened by the enterotome, the stomach along the lesser curvature, and the intestines close to their attachment to the mesentery. The liver, in many cases of poisoning, particularly by arsenical or mercurial preparations, must be reserved for chemical investigation. The state of the bladder should be also observed. In the female the internal organs of generation require particular attention, with a view to the determination of questions of abortion, rape, etc. Finally, the examiner should not forget, that although there may be strong reason, from circumstances, to suppose that the individual has met with a violent death, yet he may unexpectedly meet with some lesion, such as strangulation of the intestines, rupture of an aneurism, intestinal perforation, etc., which is in itself sufficient to explain the symptoms which preceded the death of the individual. Hence, he cannot be too careful in examining systematically and minutely every part of the body, and making accurate notes of all that he observes.

Natural aspect of the internal organs.—The following summary we have taken, with some alteration, from the valuable work of Professor Engel.¹

¹ Entwurf einer pathol.-anatomischen Propadeutik, Wien. 1845.

The *dura mater* is, in children and adults, drawn tensely over the surface of the brain; in old persons, however, it is wrinkled, and sinks in between the convolutions. It increases in its consistence with age; is in children semi-transparent, and of a pale, bluish-gray color, white and less transparent in the adult, and assumes a yellow tinge in advanced life. The under surface is smooth and polished. In old age the *dura mater* is frequently perforated by the glands of Pacchioni, and contains often, especially over the falk major, needle-like spiculæ of bone. These phenomena are of no pathological importance, except in early life, and even then, when uncombined with distinct lesions, are of little significance.

The *arachnoid* and *pia mater* are, in infants, thin, easily torn, colorless and transparent, their larger veins generally filled with dark blood; the amount of blood is in mature years relatively less, and in old age the membranes have become thick and tough, lose much of their transparency, and assume a white or yellowish-white color.

The turbidness or milky appearance of these membranes does not in advanced life deserve much attention, except when over a large surface, and is then naturally connected with other symptoms of disease. It is always accompanied with increased consistence, and appears first on the edge of the fissures and the upper surface of the cerebellum. In youth, however, it is a pathological sign of much importance. The arachnoid is chiefly concerned, the plexus choroides being the only part of the *pia mater* which is affected. The vascularity of these membranes is within the normal limits subject to very great variation, as it depends upon the general amount of blood in the circulation. But it would be certainly a symptom of disease if, in a case of general anaemia or general plethora, the amount of blood in these membranes should be such as is found in health. It can only then be considered in relation to the amount of blood in the rest of the body, and it ought to be remembered that in early life it is proportionally larger than in its later periods. The quantity of blood should be determined, not by observation of the large vessels, but of the smaller ones; for the finer the vessels which are seen to be injected, the greater is the amount of blood, and the same remark may be made of their tortuosity.

The amount of watery secretion in the internal membranes is also subject to much variation, and depends upon the age of the individual

and the condition of the blood. In infants it is comparatively more abundant than in adults, and in the latter less than in old persons. A large amount of watery effusion may have caused no symptoms during life, if it depend upon general dropsy; if, however, it have occurred in the course of some acute general disease, it will have given rise to striking symptoms. When there is but a small quantity of water present, the arachnoid is not raised by it in its passage over the spaces between the convolutions; a large quantity will render it tense, and in cases of abundant effusion the space between the membranes is filled everywhere with it, and they become thickened and tumid. But the amount of effusion does not warrant, by itself, without the presence of other symptoms, any conclusion.

§ 708. The *brain* in newly-born children is of a gelatinous consistence, and throughout of a gray or reddish-gray color. Some of its inferior portions—as, for example, the medulla oblongata—are white and firm. The lateral ventricles contain a few drops of clear, slightly yellowish fluid. It undergoes putrefaction very rapidly. The consistence of the *adult brain* is much greater; it can be broken up in the direction of its fibres, and there is a marked difference in color between the medullary and cortical portions. When a section is made through the substance of the brain, the blood contained in it appears upon the surface in red, watery points; more than this is generally indicative of disease. The normal amount of liquid in the ventricles varies from one-half of a drachm to four drachms, according to the greater or less consistence of the brain. It is clear and colorless, contains no albumen, and the lining membrane of the ventricles is generally not dissolved by it until the lapse of several days. In most cases where a softening of the cerebral substance around both ventricles is found, it may be regarded as a cadaveric change. In old persons the volume of the brain is somewhat diminished, hence the dura mater will often be found in folds. The substance of the brain is tough and elastic, and the medullary portion has a yellowish-white color. The ventricles are dilated, and contain sometimes as much as an ounce and a half of clear, colorless, slightly albuminous liquid. There is but little blood in the brain, and the arteries at its base contain fibrinous clots.

§ 709. In newly-born children the cartilages of the *larynx* are thin and elastic, its mucous membrane pale, smooth and covered with a puriform epithelial coating, which is found in the most normal condi-

tions, and particularly in the ventricles of Morgagni. The antero-posterior diameter of the larynx and trachea is less than the transverse. The bronchia are membranous and their mucous coat pale; they contain a whitish mucus, a circumstance which should not be supposed, as is too often done, to indicate catarrhal inflammation. After the age of puberty the air-passages acquire an increased volume and altered form, the antero-posterior diameter exceeds the transverse in length, the cartilages become firmer, the tracheal glands become prominent, and the posterior wall of the trachea often appears injected. No fluid is to be found except in the ventricles of Morgagni, which contain a thick whitish mucus consisting of the effete epithelium. The bronchial mucous membrane is wrinkled, of a pale gray color or reddish, the finer bronchia have a perfectly colorless and transparent wall, and contain only a small quantity of a colorless, watery fluid.

In old persons the cartilages of the larynx, trachea and the larger bronchia are often found ossified; this is not the case in women, however, except sometimes the thyroid cartilage. The mucous membrane appears almost dry. The air-passages are more capacious than in adult life. Their contents are not always the result of the secretion from the mucous membrane itself, but from the deeper part of the lungs.

§ 710. The *lungs in children* who have not breathed are found in the posterior part of the thorax, the rest of this cavity being filled with a yellowish, glutinous, watery fluid. The edges of the lungs are rounded, and their length greater than their breadth. They are dense, and resemble, in their granular structure and reddish-brown color, the liver. They are specifically heavier than water. To distinguish from hepatization those parts which, not having been dilated by the air, present this appearance, the inflation of the lungs will suffice, as it will not cause the first to disappear, but will do so with the latter. Again, to discover whether the fluid contained in the chest is a pleuritic exudation which may have so compressed the lungs as to cause them to resemble their foetal condition, we must be guided by the quantity of albumen and spontaneously coagulable constituents, and the form also of the lungs, which in pleuritic exudation are pressed flat against the vertebral column, and are not empty of blood, but rather, on the contrary, gorged with it.

The lungs of children *who have breathed* occupy the greater part of the thorax; their edges are sharp and slightly curved; here and

there tongue-like processes project, caused by a partial increased force of inflation ; the surface retains the impression of the finger, and by strong pressure the air is all expelled and the lung falls together like a ribbon. The tissue is elastic, and if not containing much water or blood, tough. The vesicular structure is not visible to the naked eye on the incised surface, but, through the pleura, numerous very small air bubbles may be seen, corresponding to the pulmonary vesicles. The color is grayish-white at the edges, in the front and outer parts a spotted rosy-red, in the under and posterior parts an intense purple. The same differences are observable upon incision. But little blood exudes upon incision, and that chiefly in the posterior portions. The pleura is thin, colorless and transparent, and but a few drops of watery fluid are found in its cavity.

The *lungs of adults* sink upon opening the thorax an inch or two from its anterior wall ; their borders are somewhat inflated, pale, dry, containing but little blood, and the pulmonary vesicles are visible through the pleura ; the middle part of the upper lobes is of an ashen or reddish-gray color, variegated with patches of white and blue, in some spots bright red, the parenchyma is tough, and frothy serum exudes upon pressure. Bloody serum is not found, but sometimes streaks of blood from the larger vessels mix with the frothy serum which is pressed out. The lower part of the upper lobes, as well as of the under, with the exception of the borders of the latter, are more easily lacerated, denser, elastic, and have a purple hue on the surface, and when cut a brownish-red color ; bloody serum mixed with bubbles of air exudes spontaneously upon the cut surface. Coagula are often found, but chiefly in the large vessels, but fibrous coagula only when the agony has been long, and in inflammations of the lung. The parenchyma is more lacerable and denser in proportion to its contents of blood or serum, and the greater the quantity of air contained in it the longer it retains the impression of the finger ; its color depends in its varieties upon the amount and character of the fluids it contains. The pigment spots are a normal appearance, they are rarely found earlier than the tenth or twelfth year, but are constantly found in adults. The amount of blood contained in the lungs is proportional to that in the heart. The pleura is at this period clear, colorless, shining and transparent. The normal amount of fluid in this sac varies within the normal condition between one and six ounces.

The lungs in *very old persons*, when the chest is opened, occupy only the posterior part of the thorax, so that their anterior portion is distant about a hand's breadth from the front of the chest. They have a peculiar feel, retain the impression of the finger, are tough, and easily deprived of the air contained in them by pressure, falling together into a thin, membranous, wrinkled form. The color is a dark gray, owing to the quantity of pigment, intermingled with bright red patches; the lower portions are of a dirty brownish-red color. The tissue is mostly dry, the posterior part alone moderately moist, with a pale brownish fluid; in the pulmonary bloodvessels, a very small quantity of fluid blood is found. Any increase in the quantity of air, blood or water, is at this age of more importance than in younger persons. The pleura is somewhat thicker and less transparent, and numerous deposits of pigment are found underneath it. The products of past diseases are frequently to be observed.

§ 711. The *heart in children* is firm and of a darker color than the other muscles. The relative thickness of the right side is greater than in adults, as also that of the auricles relatively to the ventricles. The endocardium is thin and transparent; the free edge of the ventricular valves soon becomes fringed in consequence of early commencing maceration. Both sides contain nearly the same amount of blood with a few coagula. The pericardium is transparent and more closely attached to the heart than in adults, containing from a few drops to a scruple of liquid of a yellow color, albuminous, dissolving soon the epithelium of the pericardium, and thus acquiring a turbid appearance, and rendering it possible to mistake it for an inflammatory exudation. The heart has a pyramidal shape in adults, but is more four-sided in old people. The endocardium in the former has a tendinous appearance; in the latter, particularly in the auricles, it is thick, wrinkled, opaque and yellowish in appearance, and in spots marked with the so-called atheroma. The free edge of the valves is in them, also, involuted, thickened, almost cartilaginous, and there is but a small amount of blood found in the cavities, while in adults, and chiefly in the right ventricle, coagula of blood and fibrin are found (almost) constantly. The pericardium becomes opaque in adult life, and contains from one to two ounces of a yellowish serum. The pulmonary artery and aorta are of nearly equal caliber; in *children* the former being somewhat the largest, but in *old persons* the latter.

In young persons there is relatively a large amount of blood con-

tained in the *veins*, and chiefly in those of a medium size ; the longitudinal sinus of the dura mater contains in children a large amount of blood, but in adults generally only coagulated fibrin.

712. The *peritoneum* is characterized by the same differences in the three periods of life as have been mentioned of the pleura. A few ounces of serous fluid in the peritoneum are not pathological ; on the other hand, the dryness of this membrane is doubtless a morbid symptom, as are also deposits of granular pigment in old age.

713. The *liver* in young children is relatively larger than in adults ; the upper surface more convex, the under more concave ; the parenchyma thick and tough, and indistinctly granular ; its color is very dark, and it contains a large amount of dark viscid blood. In anæmia the color is of a light yellow, the edges translucent, and the parenchyma contains a reddish serum. In adults, the structure is inelastic, distinctly granular, and in anæmia retains the impression of the finger. In old people the volume of the organ is diminished, the borders become sharper, the capsule becomes wrinkled, the tissue firmer, tougher and drier, of a brownish or greenish-yellow, or soft and putty-like, containing a dirty reddish fluid, and an increased quantity of fat. In advanced age numerous vessels become obliterated, and the portion to which they belong atrophied.

The *bile* is, in *new-born children*, viscid, clear, or of a sap-green color ; in adults thinner, and of a bright yellow, or viscid and reddish-brown, and in aged persons, scanty, but very thick and dark, and leaving a thick sediment.

§ 714. The *spleen*, in the early years of life, is dense, granular, and of the consistence of liver, dark red in color, and when incised yields no fluid blood. But in *adults* it presents within the normal limits some important varieties. Its size is variable, depending upon the general amount of blood. It is easily lacerable, and its substance is thick, and in color greyish-red. In the increase of its volume depending upon augmentation in the amount of blood, it is softer in its substance, but harder under the opposite condition. In *old persons*, this organ is small, its surface wrinkled, it retains the impression of the finger, is broken down by pressure, and is of a clear reddish-brown color. The *pancreas* and other analogous glands are of a grayish-yellow color, firm, not easily lacerable, and granular in structure. Upon pressure a small quantity of a glutinous fluid exudes.

The *digestive canal* presents important differences at the different periods of life. Its mucous membrane is, in early life, delicate, transparent, without redness or injection, except that of the mouth, which is of a pale grayish-red; of the stomach, which is red in points, and of the ileum which is injected around the aggregated follicles. The stomach is without rugæ, and those of the small intestines are few and imperfect. The isolated follicles of the small intestines are numerous and well developed; also in the duodenum and stomach, but fewer in number. The internal surface of the duodenum has a finely granular feel. The mucous membrane of the large intestine is smooth and white, its follicles prominent, opaque, and more numerous at its lower extremity. In the cavity of the mouth is found a scanty fluid secretion, and a little also in the œsophagus. The stomach contains a small quantity of a stringy, clear fluid, in the small intestine (after the meconium is passed), a bright yellow, flocculent muciform substance. In the large intestine, a greenish-yellow or brownish pasty fecal matter. Besides this the intestine always contains gas.

In adults the mucous membrane of the stomach is sometimes rugose and covered with a thick, tough, pale-gray mucous, but at other times is quite smooth, and contains only a small quantity of thin mucus. The color is generally of a pale gray, but if there be present any ingesta, it will be red in points, or if irritating substances, such as pepper, tartrate of antimony, etc., there will be vascular injection. The mucous membrane of the fundus is often softened in a degree corresponding to the quantity of fluids contained in the stomach; but this softening does not penetrate into the deeper strata of the submucous cellular tissue. The lining membrane of the duodendum has a somewhat granular surface, owing to the projecting glands, it contains a thick and turbid liquid, tinged with bile. This membrane, through the whole of the small intestines, has a velvety appearance under water, is very thin, and cannot be stripped off in pieces of any size. The solitary and agminated glands may be seen with the unassisted eye in the ileum. The mucous membrane of the large intestine is white and polished, and covered with the layer of thick transparent mucus, which is very adherent. The transverse colon usually contains much gas, the rest of the large intestine is contracted. When fecal matter has been a long time in contact with the mucous membrane, it assumes a bluish-gray appearance, or some-

times is red and injected. The glands of the rectum may be prominent and opaque without necessarily being morbid. In old people the deposit of pigmentary matter in many parts of the intestine must be regarded as a normal appearance.

§ 715. The *kidneys* of newly-born children are comparatively thick, their surface nearly uniform, and adherent to the capsules; the color is of a dark grayish-brown, and the tubular only distinguished from the cortical substance by the direction of its fibres. In the *tubuli uriniferi* may be remarked sometimes a reddish sediment, and out of the papillæ may be expressed a turbid reddish urine. The mucous membrane of the pelvis of the kidney and the ureter is smooth and white. The bladder is generally contracted, its lining membrane of a rosy white, with here and there vascular injection. In *adults*, the kidney can be easily turned out of its capsule, the tissue is inelastic, the cortical substance is of a lighter color than the tubular. Vessels disposed in a stellated manner are seen upon the surface, and when cut, reddish points. The pelvis of the kidney is enveloped in a dark granular fat, the mucous membrane of this, the ureter, and urethra is smooth and polished. In old persons the kidneys are usually diminished in size, and surrounded with fat and a thick capsule, the surface is granular and uneven, the substance firm and tough, the color of the cortical substance is a pale reddish-brown or grayish-red. There are but few Malpighian bodies to be seen, but, on the other hand, minute vesicles filled with fluid. The tubular substance does not differ from the cortical in its color; hyperæmia and anæmia of the kidneys commence in the former, diminution of consistence in the latter.

§ 716. VI. *Reports*.—It has been already stated, that careful notes should be taken during the progress of the autopsy. These should be preserved, and, as soon as possible afterwards, a report drawn up embracing all the medical facts resulting from the inspection. The utmost precision is requisite in these reports, and the avoidance as far as possible of technical terms is desirable. The report of the chemical analysis should be appended to the general report; and at the conclusion, the opinion as to the cause of death may be given, together with the general inferences resulting from the facts observed at the examination. Where written reports are not required, it is nevertheless advisable that the physician should prepare one for his

own use, since by this means he cannot fail to gain a more intelligent view of the whole case.

The reader will find in the following remarks selected from "Suggestions for the Medico-Legal Examination of Dead Bodies by Professor Traill, Christison and Syme (with additions by A. Watson, M.D.,)" more minute directions upon some points than we have thought necessary to give above :

"It is desirable that the Medical Inspectors shall have an opportunity of viewing the body before it is undressed or moved from the spot where it was first found. If the body had been previously removed or meddled with, they ought to inform themselves accurately as to its original position. In many cases it is material that they personally visit the place where it was first seen; and they should inquire minutely into all the particulars connected with the removal of it.

"5. In cases where the body has been buried, and disinterment becomes necessary, it ought not to be removed from the coffin, except in presence of the inspectors.

"6. Where a considerable period has elapsed between death and disinterment, the inspection must in all cases be proceeded with, although the body be found in a state of decay, unless the inspectors can positively say that the progress of decay is such as to render the examination nugatory in relation to its special objects. The degree of decay which will justify such an opinion will differ with a variety of circumstances which cannot be properly specified here. It may be observed, however, that where the injuries of the bones are to be looked for, or the traces of certain poisons, it is scarcely possible to assign the limit at which an inspection must of necessity be fruitless. It is of moment to remember that the internal organs are often in a great measure entire, although the external parts are much decayed. The inspection, where the body is much decayed, will be rendered greatly less annoying to those present by frequently washing the parts successively exposed with a solution of chloride of lime, of the strength of one part in forty; but this must be carefully kept clear of any parts which may afterwards require to be examined for poison.

"7. No one should be allowed to be present at the examination out of mere curiosity. But especially every individual, not of the medical profession, ought to be excluded, who is likely to be a witness either in the preognition or trial; and consequently any one who attends to give information, if likely to be a witness, should remain in an adjoining room. The reason for this rule is, that the medical inspection often furnishes good tests of the value of otherwise doubtful evidence of a general nature; and it is therefore necessary that the general witnesses should not have an opportunity of knowing what is observed in the dissection of the body.

"8. The examination and dissection of the body should not be undertaken, if possible, except with sufficient daylight in prospect to allow the whole inspection to be made without artificial light.

"9. While the one inspector conducts the practical details of the examina-

tion, the other should take notes of its successive steps, indicating all the points inquired into, with the observations made and appearances presented, negative as well as positive, and stating simple facts only, without either generalizations or opinions. These notes should be looked over by both inspectors before the body is sewed up, that omissions in the notes or in the inspection itself may then be supplied; and the notes, properly signed, dated, and sealed, must be lodged with the law authorities, a copy being preserved, if thought advisable by the inspectors.

" 10. The inspectors must deliver to the same authorities, and within two days, where no further examination is required, a distinct report, containing their opinion in the case, with the reasons succinctly and clearly stated. They must understand that they cannot found their opinions on any facts represented to have been ascertained by themselves during the inspection, which are not specified in their notes.

" 11. Great attention must be paid not to express any premature opinion of the nature of the case from appearances presented on a partial examination, because the real cause of death often turns out very different from what it seems in the first instance to have been. In cases of injuries, or apparent drowning, hanging, strangling, burning, and the like, it should always be remembered that the appearances of such death may have been accidentally induced or purposely contrived after death, while the actual cause of death is different, and only to be detected by a careful and thorough inspection of the whole body.

" 12. It is a good rule that all injured or diseased parts should be removed and preserved, wherever this is practicable. Soft parts, except what are to become the subject of analysis in the search for poison, are best preserved in a concentrated or strong solution of common salt.

" 13. When any portions of the body, or any substances found in or near it, are to be preserved for further examination, they ought never to be put out of the custody of the inspectors, or of a special law-officer. They must be locked up in the absence of the person who keeps them. When they are to be transmitted to a distance, they should be labelled, and the labels signed by the inspectors; and, after being properly secured and sealed, they should be delivered by the inspectors themselves, or the special law-officer, at the coach-office by which they are to be forwarded."

SECTION II.—*Necessary Implements.*

" 14. Besides the ordinary instruments used in common dissections, the inspectors should be provided with a foot-rule, and an ounce-measure graduated to drachms, for measuring distances and the quantities of fluids; a few clean bladders for carrying away any parts of the body which it may be necessary to preserve for future examination; and, in cases of possible poisoning, three or four bottles, of 8, 12, and 16 ounces, with glass stoppers or clean corks, for preserving fluids to be analyzed. [It is also necessary to be provided with paper, pens, ink, and sealing-wax.]

" 15. All distances, lengths, surfaces, and the like, whose extent may require

to be described, ought to be actually measured; and the same rule ought to be followed in ascertaining the volume of fluids. Where large quantities of fluids are to be measured, any convenient vessel may be used whose capacity is previously ascertained by the ounce measure. Conjectural estimates and comparisons, however common in medico-legal inspections, are inadmissible.

" 16. The importance of the external examination, and the particulars of it to be chiefly attended to, will vary in different cases with the probable cause of death. It comprehends: 1. An examination of the position of the body when found. 2. Of the vicinity of the body, with a view to discover the objects on which it rested [might have fallen upon, or been suspended from], marks of a struggle, signs of the presence of a second party about the time of death, or after it, weapons or other objects the property or not the property of the deceased, the remains of poisons, marks of vomiting; and, where marks of blood are of importance, and doubts may arise as to their really being blood, the articles presenting them must be preserved for examination. 3. Of the dress; its nature and condition, stains on it of mud, sand, or the like, of blood, of vomiting, of acids, or other corrosive substances, in the case of suspected poisoning; marks of injuries, such as rents and incisions; and where injuries have been inflicted upon the body, care should be taken to compare the relative position of those on the body and those on the clothes; and where stains apparently from poison are seen, the stained parts are to be preserved for analysis. 4. Ligatures, their material and kind, as throwing light on the trade of the person who applied them, the possibility or impossibility of the deceased having applied them himself, their sufficiency for accomplishing their apparent purpose etc."

* * * * *

SECTION V.—*Examination in cases of Wounds and Contusions.*

" 33. The most approved mode of examining injuries is, if they be not situated over the great cavities, to expose the successive layers of muscles in the manner of an ordinary dissection, observing carefully what injuries have been sustained by the parts successively exposed before they are divided. No advantage will be derived from previous injection of the bloodvessels, even supposing this were always attainable. Careful dissection, with a knowledge of the structure and relation of the parts, is a safer guide.

" 34. The seat of wounds must be described by actual measurement from known points, their figure and nature also carefully noted, and their direction ascertained with exactness.

" 35. Before altering by incisions the external appearance of injuries, care must be taken to consider what weapon might have produced them; and, if a particular weapon be suspected, it should be compared with them.

" 36. Apparent contusions must be examined by making incisions through them; and the inspectors will note whether there be swelling or puckering of skin, whether the substance of the true skin be black through a part or the whole of its thickness, whether there be extravasation below the skin, and whether the blood be fluid or coagulated, generally or partially; whether the soft parts below be lacerated or subjacent bones injured, and whether

there be blood in contact with the lacerated surfaces. By these means the question may be settled whether the contusions were inflicted before or after death.

" 37. In the case of wounds, too, the signs of vital action must be attended to, especially the adhesion of blood to their surfaces, or the injection of blood into the cellular tissue around, or the presence of the signs or sequelæ of inflammation.

" 38. Where large arteries or veins are found divided, care must be taken to corroborate the presumption thus arising by ascertaining, in the subsequent dissection, whether the great vessels and membranous viscera be unusually free of blood.

" 39. In the course of the dissection of the wounds, a careful search must be made for foreign bodies in them. Where firearms have occasioned them, the examination should not be ended before discovering the bullet, wadding, or other article lodged; and whatever is found must be preserved. Where the article discharged from firearms, or indeed any other weapon, has passed through and through a part of the body, the entrance wound and exit wound must be carefully distinguished by their respective characters.

" 40. When wounds are situated over one of the great cavities, they ought not to be particularly examined until the cavity is laid open; and in laying open the cavity, the external incisions should be kept clear of the wounds.

" 41. The organs in the abdomen furnish the best source for information as to the sign of bloodlessness in presumed death by hemorrhage. [The state of the brain is also a good criterion.]

SECTION VI.—*Examination in cases of Poisoning.*

" 42. In examining a body in a case of suspected poisoning, the inspectors should begin with the alimentary canal, first tying a ligature round the cardiac end of the stomach, and two round its pyloric end; then removing the stomach and whole intestines; next, dissecting out the parts in the mouth, throat, neck, and chest, in one mass; and, finally, dissecting the gullet, with the parts about the throat, from the other organs of the chest. The several portions of the alimentary canal may then be examined in succession.

" 43. In all their operations they ought to make sure that the instruments, vessels, and bladders used are quite clean.

" 44. In cases of supposed poisoning, a minute inquiry must, in the first instance, be made into the symptoms during life—their nature, their precise date, especially in relation to meals or the taking of any suspicious articles, their progressive development, and the treatment pursued. It is impossible to be too cautious in collecting such information; and, in particular, great care must be taken to fix the precise date of the first invasion of the symptoms and of the previous meals. The same care is required in tracing the early history of the case, where the inspector happens to visit the individual before death; and if suspicion should not arise till his attendance has been going on for some time, he ought, subsequently to such suspicions, to review and correct the information gathered at first, especially as to dates. All facts thus obtained

should be immediately committed to writing, and ought to form part of the narrative of the inspection to be delivered to the law authorities.—See §§ 9, 10.)

“45. Before inspecting the bodies, the inspectors, after ascertaining the history of the case, should proceed, if they see cause, to search, in company with the proper law officer, for suspicious articles in the house of the deceased. These are suspected articles of food, drink, or medicine; the vessels in which they had been prepared or afterwards contained, the family stores, or the articles with which suspected food, etc., appears to have been made. All such articles must be secured, according to rules in § 13, for preserving their identity. In this examination, the body, clothes, bedclothes, floor, and hearth should not be neglected, as they may present traces of vomited matter, acids spurted out or spilled, and the like.

“46. When a medical man is called to a case, during life, where poison is suspected, he ought as soon as possible to follow the instructions laid down for securing articles in which poison may have been administered.

“47. In the same circumstances, it is his duty to observe the conduct of any suspected individuals, were it for no other reason than to prevent the remains of poisoned articles from being put out of the way, and to protect his patient from further attempts.

“48. The whole organs of the abdomen must be surveyed, but particularly the stomach and whole track of the intestines, the liver, spleen, kidneys, and the bladder; and, in the female, the uterus and its appendages. The intestines should in general be slit up throughout their whole length; and it should be remembered that the most frequent seat of disease of the mucous membrane is in the neighborhood of the ileo-cæcal valve.

“49. In cases where the possibility of poisoning must be kept in view, the contents of the stomach should be preserved; also, sometimes, those of the great and small intestines, and occasionally even those of the gullet.

“50. It is generally necessary to ascertain whether any spirituous fluid [or opium] be contained in the stomach. This may sometimes be done by the odor of its contents, but oftener not; so that where the point is one of evident consequence, it may be necessary to search for alcohol by distilling the contents [if any], and examining the distilled liquid as directed in works on poisons.

“51. The intestines may be examined at once by laying open their whole course. The parts, where appearances are most frequently found in poisoning, are the duodenum, upper part of the jejunum, lower part of the ileum, and rectum. Care should be taken to preserve their contents in a bottle, and the intestines themselves in a bladder, if they present any unusual appearance which will keep. The stomach should be taken out entire, and its contents emptied into a bottle. The smell proceeding from its contents should be observed when it is first laid open, as this often alters speedily. If the stomach present any remarkable appearance, its examination may be reserved, if convenient, till a future opportunity; but in every circumstance it must be preserved and carried away. The throat and gullet may be examined at once, and preserved with their contents, which, if abundant, may be kept apart in a bottle.

“52. No person ought to undertake an analysis in a case of suspected poi-

soning, unless he be either familiar with chemical researches, or have previously analyzed with success a mixture of organic substances, containing a small proportion of the poison suspected.

" 53. The inspectors will learn from the law authorities, whether, in the event of the discovery of poisoning by them, it is probable that the opinion of some other person practised in toxicological researches may be required; and, in that case, they will take to use only one-half of the several articles preserved for analysis. They will remember that the stomach itself is one of the articles for analysis, because poison may be found there, though not present in the contents. The identity of the subjects of analysis must be secured by the rules of § 13."

SECTION VII.—*Examination in cases of Suffocation.*

" 54. In cases of suspected drowning, the inspectors will observe particularly whether grass, mud, or other objects are clutched by the hands, or contained under the nails; whether the tongue be protruded or not between the teeth; whether any fluid, froth or foreign substances be contained in the mouth or nostrils, in the trachea or bronchial ramifications; whether the stomach contain much water; whether the blood in the great vessels be fluid. When water, with particles of vegetable matter or mud, is found within the body, these must be compared with what may exist in the water in which the body was discovered. Marks of injuries must be compared diligently with the objects both in the water and the banks near it.

" 55. In cases of suspected death by hanging, strangling or smothering, it is important to attend particularly to the state of the face as to lividity, compared with the rest of the body; the state of the conjunctiva of the eyes, as to vascularity; of the tongue, as to position; of the throat, chin and lips, as to marks of nail scratches, ruffling of the scarf-skin, or small contusions; the state of the blood, as to fluidity; the state of the membranous organs in the abdomen and of the lungs, as to congestion. The mark of a cord or other ligature round the neck, must be attentively examined; and here it requires to be mentioned, that the mark is often not distinct until seven or eight hours after death, and that it is seldom a dark livid mark, as is very commonly supposed, but a pale, greenish-brown streak, if made with a rope, representing in general no ecchymosis, but the thinnest possible line of bright redness at either edge, where it is conterminous with the sound skin. Nevertheless, effusions of blood and lacerations should be looked for under and around the mark, in the skin, cellular tissue, muscles, cartilages, and lining membrane of the larynx and trachea. Accessory injuries in other parts of the body, more especially on the chest, back and arms, must be looked for; as likewise the appearance of coagulated blood having flowed from the nostrils or ears, and discharge of feces, urine, or semen."

SECTION VIII.—*Examination in cases of Burning.*

" 56. In supposed death from burning, the skin at the edge of the burns should be carefully examined for redness, or the appearance of vesicles containing fluid."

SECTION IX.—*Examination in cases of Infanticide.*

" 57. In cases of suspected infanticide, certain peculiarities must be borne in mind. The cavity of the head should be laid open with a pair of scissors. In opening the abdomen the incision may be carried through the whole parieties at once; and the navel should be avoided, so that the state of the vessels of the navel-string may be examined correctly.

" 58. The inquiry in cases of infanticide should be conducted with a distinct reference to the following questions : 1. The probable degree of maturity of the child. 2. How long it has been dead ? 3. Whether it died before, during, or after delivery, and how long after ? 4. Whether death arose from natural causes, neglect, or violence ? 5. Whether the suspected female is the mother of the child ?

" 59. The points to be attended to for ascertaining the probable degree of maturity of the child are the state of the skin, its secretions, and its appendages, the hair and nails ; the presence or absence of the pupillary membrane ; the length and weight of the whole body ; the relative length of the body and its members ; and the point on the abdomen corresponding with the middle of the length of the body ; the relative size of the lungs and heart ; the relative size of the liver, indicated by the position of its margin ; the situation of the meconium in the intestines ; the position of the testicles in the case of males.

" 60. The points of chief importance, in reference to the period which has elapsed after death, are those specified in the last clause of section 17.

" 61. The circumstances which indicate whether the child died before or during parturition, and how long after it, are the signs of putrefaction within the womb ; the marks of the crown, feet, buttocks, shoulders, etc., indicating presumptively the kind of labor ; the state of the lungs, heart, and great vessels, showing whether or not it had breathed ; the nature of the contents of the stomach, and of the intestines ; the presence or absence of urine in the bladder ; the presence of foreign matters in the windpipe ; the state of the umbilical cord, or of the navel itself, if the cord be detached.

" 62. In order to examine properly the state of the lungs, heart, and great vessels, with a view to determine whether or not the child had breathed, the inspection should be made in the following order : Attend first to the situation of the lungs, how far they rise along the sides of the heart—to their color and texture—and whether they crepitate or not. Examine next, but without displacing them, the condition of the ductus venosus and umbilical vessels. Then secure a ligature round the great vessels at the root of the neck, keeping clear of the ductus arteriosus, and another round the vena cava above the diaphragm. Cut both sets of vessels beyond the ligatures, and remove the heart and lungs in one mass ; which must be weighed and put in water to ascertain whether the lungs, with the heart attached, sink or swim. In the next place, put a ligature round the pulmonary vessels, close to the lungs, and cut away the heart by an incision between it and the ligature. Compare now the relation of the diameter of the ductus arteriosus to that of the pulmonary trunk and of the pulmonary branches, and look for any indication of partial contraction in the duct towards its aortal end. Lastly, ascertain the weight of the lungs ;

their relative weight to that of the whole body ; whether they crepitate when handled ; whether they sink or swim in water ; whether blood issues freely or sparingly when they are cut into ; whether any fragments swim in the instances where the entire lungs sink ; and, in every instance of bouyancy, whether fragments of them continue to swim when well squeezed in a cloth.

" 63. The points to be considered in relation to the cause of death, are the signs of natural death before parturition, and of natural, accidental, and violent death during parturition as well as after delivery. The most frequent forms of violent death during labor, are, puncture of the fontanelles, orbits, or nucha ; twisting of the neck after delivery of the head ; compression of the head ; detruncation of the head ; strangling and smothering. The chief varieties of violent death after delivery are : smothering by overlaying or otherwise ; hemorrhage from the umbilical cord ; simple exposure ; starvation ; injuries of the head from falls, blows, or compression ; wounds of the throat ; puncture of the fontanelles, nucha, orbits, cribriform plate, spine, ears, or heart ; laceration of the great gut, or of the internal parts of the throat, by instruments thrust in the anus or mouth ; drowning ; poisoning ; burning ; strangling with the hand or a ligature ; choking by foreign bodies thrust into the back of the throat, or by dividing the frænum linguae and doubling back the tongue.

" 64. The circumstances noticed in §§ 59, 61, 62, compared with the signs of recent delivery in the female, will lead to the decision of the question, whether the suspected female be the mother of the child. These are the signs of the degree of maturity of the child ; the signs on the body of the kind of labor ; the signs which indicate the date of its death, and the interval which elapsed both between its birth and death, and between its death and the inspection."—*Watson on Homicide.*

CHAPTER IV.

SURVIVORSHIP.

§ 720. IN Prussia, it is now provided by statute that when two or more persons lose their lives in a common calamity in such a way that it cannot be ascertained which has survived, then it is to be assumed that no one of them has survived the others.¹ So effective has this been in Germany in quieting litigation of this character, that Liman (1871) tells us that cases where the courts are called upon to adjudicate as to survivorship now very rarely arise. Casper was

¹ Pr. Allg. Landrecht, Th. i., tit. I., § 39.

called upon for an opinion in but a single case; Liman in but two. We usually assume, continues Liman, in showing the unsatisfactory character of the merely scientific tests that are invoked, that we can resolve questions of doubt by appealing to the distinctive individualities of the persons found dead; to their respective ages, sexes, and constitution; to the position in which they were found; to the degree of progress of decomposition. But all these tests are fluctuating: and the only general conclusion which we can reach is that each case is to be judged by its peculiar circumstances. Three men, for instance, to adopt the illustration given afterwards by Casper, are killed in a riot; A., by a sword wound on his head; B., by a bayonet thrust in his heart; and C., by a gunshot that has severed a jugular vein. Here we cannot hesitate to conclude that B. died the first; that C. may have resisted death a little longer before final exhaustion; and that A., for a still longer period withstood the fatal effect of his wound. But who can decide who survived among several persons who by the same casualty encountered death by drowning? When, by the burning of a house, a whole family consisting of a father, mother, and three children, were destroyed, would it have been possible for us to determine who died first? It is, therefore, with great wisdom, continues Liman, that the Roman law, followed in this respect by subsequent European legislation, has concluded that in cases of this kind in which absolute scientific conclusion by experts may be impossible no positive judicial conclusion can be reached.¹ In England and the United States, when there is no evidence from which survivorship may be inferred, a party who bases his claim on survivorship fails from want of evidence to make out his case. When, however, there is any evidence as to the mode of death, then there the question is one of inference from all the facts in the case. The conditions usually occurring will now be examined as follows:

I. AS TO THE PARTIES, § 721.

- 1st. Sex, § 721.
- 2d. Age, § 723.
- 3d. Size and temperament, § 724.
- 4th. Health, § 725.

II. AS TO MODE OF DEATH, § 726.

- 1st. Drowning, § 726.
- 2d. Asphyxia, § 735.

¹ 2 Liman's Casper, 1871, 17.

- 3d. Heat, § 736.
- 4th. Cold, § 737.
- 5th. Starving, § 738.
- 6th. Poison, § 741.
- 7th. Crushing or burying alive, § 742.
- 8th. Childbirth, § 744.
- 9th. Wounds, § 745.

III. TESTS WHERE BODIES ARE FOUND DEAD, § 746.¹

¹ The following is from an article in the Irish Law Times reported in 14 Cent. L. J. 368 (1882): "M. Rivoire, a resident of Marseilles (in a case reported in 1881), was, with his wife, rowing outside the harbor; their boat was capsized by the swell of a passing steamer, both were precipitated into the water, and both were drowned. The wife made a will in favor of her husband, if it could be established that she had been the first to die, the property would go to his heirs. If, on the other hand, she survived, her next of kin would be entitled to the real and personal estate. Now, here direct proof as to which was the survivor could not, of course be had. As to indirect proof, on the one hand, it might be contended that the man, being stronger and more robust, was likely to have made a harder fight for life, clinging to the boat, perhaps, and swimming as long as his strength held out, while the woman, being the weaker, made less effectual and less prolonged efforts, and succumbed to fatigue and despair at an earlier period than her husband; and on the other hand, in favor of the belief that Madame Rivoire survived the longer, it might be urged that she was, all things considered, more buoyant, that her dress was likely to help greatly in keeping her afloat, and that in all probability, the husband had exhausted himself in efforts save her before he sank to rise no more. But in cases like this, in the absence of more authentic testimony, obviously, nothing but a statutable enactment could settle the question beyond possibility of doubt or cavil; and the Code Napoleon legislates for this difficulty (Arts, 720, 721, 722). Under it if several persons respectively entitled to inheritance from one another happen to perish by the same event, such as a wreck, a battle or a conflagration, without any possibility of ascertaining who died first, the presumption of survivorship is determined by the circumstances of the fact. But in the absence, as interpreted, (1) of material facts, resulting from the appearance of the body, examined by physicians, (2) of the testimony of persons who witnessed the event, and (3) of circumstances of the fact., certain presumptions are created and resorted to. As originally framed, the Code (art. 720), declared that, when it could not be ascertained who died first, the age and sex of the parties should guide the judges in their decision; to which Consul Cambaceres objected as too absolute (2 Motifs et Discours du Code Civil, 321, ed. 1838). And as now modified, it is declared that, in the absence of circumstances of the fact, the determination must be decided by the probabilities resulting from the age, strength and difference of sex, according to the following rules: If those who have perished together were under the age of fifteen years, the eldest shall be presumed to have survived; if all were above the age of sixty years, the youngest shall be presumed to have survived; if some were under fifteen and

I. AS TO THE PARTIES.

§ 721. 1st. *Sex*.—If the question depend on strength alone, then survivorship, all other things being equal, would be assigned to a man when a man and a woman perished in a common calamity. But there are many qualifying circumstances to be considered. In a shipwreck a man is more likely to expose himself in an attempt to save his companions, and is less likely to be buoyed up by clothes than is a woman.

some above sixty, the first shall be presumed to have survived ; if those who have perished together were above the age of fifteen and under sixty, the male must be presumed to have survived, where there was an equality of age or a difference of less than one year ; if they were of the same sex, the presumption of survivorship, by which the succession becomes open in the order of nature, must be admitted—thus, the younger must be presumed to have survived the elder. As to how the Code Civil has been construed, we shall but refer our readers to its commentators, Marcade, Demolombe, etc. ; and in Merlin may be found an exhaustive *resume* of the French decisions from the earliest period to the present time. In deciding cases arising out of the Massacre of the Huguenots, on St. Bartholomew's Day, it seems the Parliament of Paris acted on the presumption that the murder of the older persons preceded that of the younger, believing that those who were capable of offering resistance would have been first assassinated (Stryk. Diss. 10, c. 6, No. 11) ; and so, in the case of the murder of the daughter of the celebrated Dumoulin with her two children, it was presumed that the robbers first slaughtered the mother (Pothier, *Traite de Suxes*, c. 3, s. 1). In the State of Louisiana the provisions of the Code Civil have been adopted in terms (Civil Code of Louisiana, §§ 930-939 ; see Gallier's Case, admirably annotated in 2 South. L. Rev., N. S. 594). And to a certain extent analogous were the rules of the Roman law, as to which Covarruvias, Cujas, Bartolus and Menochius should be consulted. Thus, '*Cum bello pater cum filio periisset, materque filii quasi postea mortua bona vindicaret, agnati vero patris quasi filius antea periisset. Divus Hadrianus credidit, patrem prius esse mortuum.*' And again, '*Mulier naufragio cum anniculo filio perit quia verisimile videbatur, ante matrem infantum perisse, virum partem dotis retinere placuit.*' In Italy and Spain the doctrines of the Roman law and its commentators are adopted with some modifications. But, principles more resembling the English, appear to prevail in the German and Scandinavian States. So, by the Civil Code of Holland (§ 878), in the absence of evidence, the presumption is that all persons who perish together die at the same moment, and that there is transmission or succession from one in favor of the other. So, in Prussia, it is provided that where two or more persons lose their lives in a common calamity, in such a way that it cannot be ascertained which has survived, it is to be assumed that neither has survived the others (All. L. I. i. 30). And so, by the Mahometan law of India, where relatives perish together, it is presumed that they all died at the same moment, and the property of each passes to his heirs, without any portion of it vesting in his companions in misfortune."

In cases of suffocation Zacchias assumes the survivorship to be with the woman, on account of a less liability to asthma. This is verified by one or two cases. A girl and a young man were exposed in the same apartment to coal-gas. He was dead, but she, though she had been exposed ten hours, recovered.¹ Recent (1882) cases of death of parties through the escape of gas in the chambers where they were sleeping, are to the same effect. Capacity to resist starvation is not in any way modified by sex. The most remarkable cases of prolonged fasting (*e. g.*, that of Tanner in New York in 1880) have been those of men. On the other hand, the following is related by Dr. Krügelstein. In the Catacombs near Maestricht there is a labyrinth from which, when the way is lost in the dark, it is almost impossible to escape. Among the mummies which are found in the passage is one of a Leipzig student, whose name is not recorded. This much, however, is told of him. He was a man of peculiar intelligence and attractiveness, and was preparing for a professorship. An attachment sprang up between himself and the daughter of a rich merchant from Leipzig. The father refused his consent, and the young couple eloped and hid themselves in Maestricht. They were followed there, and finally took refuge in the Catacombs, thinking that they could readily conceal themselves there for a few days. Their track, however, was followed, and at the end of the third day they were discovered in a remote hole. The husband was dead, and his body is the mummy just mentioned. The wife was resuscitated, and lived to an extreme old age.

§ 722. According to Dr. Guy, in cases where one of each sex perishes by the same accident, the probability is that the male, being stronger, is the survivor. This view has received a melancholy confirmation in the wreck of the Atlantic, in April, 1873, in which, out of three hundred survivors from a steamer crowded with emigrants, there was not a single woman or child. This rule applies only where strength and courage are the best means of safety. In those cases, however, where the danger of death is increased by struggles and resistance, the probability of survivorship is said by Guy to be with the female, from the incapacity of action which would result from her greater liability to weakness and fainting.²

§ 723. 2d. *Age.*—The body is in the possession of its maximum

¹ Henke's Zeitschrift, 1 Heft., B. 75, s. 99.

² Guy's Medical Jurisprudence, 400.

strength and vigor between the ages of 27 and 50. In cases, therefore, where adults between these ages perish by the same means and where strength and power of endurance only are concerned, no presumption of survivorship can be entertained between them. Before and after these ages the power of endurance is probably less, but still between the ages of 15 and 60 not enough difference can exist to establish any general rule. Where a middle aged person perishes with one under puberty or above 60, the probability of survivorship is in favor of the adult. Where one under 15 and one over 60 perish together, according to the French law, the former is the survivor. The civil law assumes that in case the parent and child die by a common death, the child survives the parent if he is above puberty, and dies first if he is below that age.¹ The particular rule in shipwreck will be hereafter given.²

§ 724. 3d. *Size and temperament.*—Hippocrates is quoted as saying *qui natura sunt valde crassi, subito moriuntur quam graciles.* The fat, in other words, die quicker than the slender. The older commentators on this passage make a still further distinction between those who are naturally stout, and those whose fat is the result of high living, the latter of whom they declare to be more shortlived.³

Temperament.—Persons who are sanguine and choleric outlive those who are melancholy and phlegmatic. *Celui qui est doué d'un temperament pituiteux meurt le premier, vient ensuite le melancholique, puis le sanguin et le bilieux.*⁴

The timid die much more quickly than the courageous.

Dr. Gray says: “It is necessary, however, to understand that mere

¹ The duration of human life is very different in different cases, but seldom exceeds 100 years. The average duration in Russia is 21.3, in Prussia 29.6, in Switzerland 34.6, in France 35.5, in Belgium 36.5, in England 38.5 years. The probable duration of life has latterly increased. The average length of life is greater with married persons than with those who remain single; this difference is more remarkable in the case of females than in that of males, but the former are more subject to fatal attacks during the period of child-bearing. Extreme old age is often reached by men than by women. The average duration of life is different in different professions. Among theologians it is 65.1, among merchants, 62.4, among government officials 61.7, among farmers and foresters 61.5, among soldiers 59.6, among lawyers 58.9, among teachers 59.9, among physicians, 56.8. (See Böcker's *Gericht. Med.*, ed. 1857, § 129.)

² *Infra*, §§ 1031, 1039.

³ See Pauli Zachiæ Quæstion Med. Leg., lib. v. tit. iii. Quæst. 12.

⁴ Orfila, *Leçons de Médecine Légale*, Paris, 1825, tom. ii., p. 271.

muscular strength and power of endurance are two very different things, and do not often meet in the same person. Muscular strength is often greatest in the so-called lymphatic temperament; power of endurance in the bilious."¹

§ 725. 4th. *Health*.—Disease, all other things being equal, supposes an earlier death.

II. AS TO THE MODE OF DEATH.

§ 726. 1st. *Drowning*.—Many cases of great difficulty have arisen from doubt as to the priority of death, where persons have perished from drowning. Where shipwreck occurs, men are more apt to be saved than women. They are stronger, can endure more, and are more apt to know how to swim than women, and generally they are more apt to be upon the deck, and in favorable places to secure their safety, than are women.

When the comparison is between those of the same age and sex, it is to be considered which of them was the more exposed to cold from having his body only partly immersed. Investigation should also be made as to whether any injuries may have occurred to prevent a swimmer from using his strength.

When there is an explosion, those persons, according to Orfila, who are the lightest and weakest, will be presumed to have been the last who were precipitated into the water. When the water is reached, however, and in all cases of ordinary shipwreck, the presumption of survivorship is with those who have the greatest presence of mind and strength, and with those best acquainted with swimming. Besides this, the following considerations are to be noticed:—

Dress very much affects the power of keeping above water. Boots soon fill with water and interfere with swimming. A woman's clothes, as lighter, and often exposing a greater resistance to the water than those of a man, may act as floats to keep the body a few moments longer on the surface.

A power to hold in respiration, or a condition of the body that permits this, presumes a longer struggle.

It should be inquired, also, whether the death was by apoplexy or suffocation. Persons of apoplectic tendencies are very apt to be struck with the disease when suddenly precipitated into the water, and

¹ Guy's Med. Jur., 400.

when this is the case, death is presumed to have been earlier than in the ordinary cases of suffocation.¹

§ 727. In 1766 General Stanwix and his daughter set sail from Ireland for England, and during the voyage both perished from shipwreck. Opposing claims were set up for the personal estate by the nephew of Gen. Stanwix and the maternal uncle of the daughter. It was argued, in favor of the general's survivorship, that he, being a soldier and man of courage, would be apt during tempestuous weather to be upon deck, while the daughter would probably be below, and hence it was supposed that the father would struggle much longer for his life than the daughter. It was contended, on the other hand, that the general was old and feeble, while the daughter was young and healthy, and hence able to resist such an attack longer than the father.

A second wife of the general perished at the same time, and her representatives put in a claim to the property. The difficulties were such that the judges were unable to decide, and advised a compromise, which was accordingly effected.²

§ 728. In 1838 occurred the explosion, near Charleston, South Carolina, of the steamer Pulaski, from which two remarkable cases

¹ According to Böcker, the stronger person will live longer—the mature man longer than the child or old man. In cases of poison, the person who is found to have taken the largest dose probably died soonest. In cases of suffocation, the person who has strong lungs has probably survived one with weaker, as a young child. In cases of drowning, a good swimmer has probably retained life longest. Persons upon whom traces of reactions are found have survived those upon whose bodies such marks are wanting. In cases of injuries the more important the organ affected, the sooner death follows. A sick person will die sooner than one in good health. Women bear loss of blood longer than men. If the fatal instrument must have reached the different persons at intervals, the one first reached has probably died first. Where one of the persons has died by the hands of another, and the other by his own hands, the latter has probably survived the former. In cases of starvation or of freezing, young, weak, lean persons perish sooner than others. Hunger and thirst combined produce death sooner than hunger or thirst alone. If a mother and a newly-born infant are found dead, it is probable that the infant, where it was evidently born alive, lived the longer. Some physicians hold the opinion that the birth of a child may be consummated after the death of the mother. The person whose body is most advanced in decomposition died first.

In some cases the circumstances will enable one to decide with a high degree of probability as to priority of death.

² *R. v. Hay*, 1 W. Bl. 640.

arose. In the first¹ it appeared that Hugh Swinton Ball, with his wife and adopted daughter, were lost on board the steamer Pulaski, in June 14, 1838. By will he left certain portions of his estate to his wife in case she survived him. The facts are thus stated by Chancellor Johnson : "The Pulaski left Savannah on the 13th of June 1838, and arrived at Charleston that evening. The next morning Mr. and Mrs. Ball, their adopted daughter, and a servant went on board, and she departed north on her course, until about 11 o'clock of that night, when, most of the passengers having retired to their births, the starboard boiler exploded. By the explosion an extensive breach was made on the starboard side of the vessel. Her main deck was blown off, thus destroying the communication between the forward and after part of the steamer. The forward part of the upper deck (called the hurricane deck, in contradistinction to the after part, which is called the promenade deck) was blown off, carrying with it the wheel-house, in which the commander of the boat, Capt. Dubois, was sleeping at the time ; the gentlemen's forward cabin was much torn, its floor ripped up, and its bulkhead driven in, and Major Twiggs, whose berth was there, gives us reason to suppose that many perished in that part of the vessel by the explosion. The gentlemen's after cabin (which was under the main deck and immediately beneath the ladies' cabin, which was on that deck) was also injured. Some part of the floor was ripped up, the bulkhead partly driven in, and the stairs communicating with the deck more or less shattered. The vessel was careened to the larboard, and as she dipped began to fill with water. In a very short time the hold was filled, and the water gained to the level of the floor of the gentlemen's cabin. It rose higher with great rapidity, the vessel settled to the centre, where the breach was, and all hope that she could hold together was abandoned. She parted amidships, and the forward and after parts pitched into the water toward the centre, at an angle of nearly thirty degrees. The gentlemen's after cabin was now entirely filled, and the forward cabin was certainly in as bad a condition. There were some persons on the forward part of the vessel, nearly all of whom speedily perished, but the greater number were in the after part, including one or two who had passed by swimming from the forward to the after part. Of those on the after part, as many as could climbed to the promenade deck ; but there were many, mostly ladies

¹ *Pell v. Ball*; 1 Cheves's Ch. Cases.

among whom was Mrs. Ball, who remained on the main deck. These as that deck sank deeper and deeper, retreated along the gangways, by the ladies' cabin, toward the stern. The promenade deck, by the action of the waves, was burst from the top of the boat and was submerged with all that were on it. Whether the stern of the boat was submerged at or after this time is uncertain. Some of the witnesses think it was, even before the promenade deck, others that it was not submerged at all. All these events had taken place, according to most of the witnesses, in about from forty to fifty minutes; according to others, in less time.

"Some few escaped in the boats, others on parts of the wreck, and others on rafts constructed by them as they could. Of Mrs. Ball, nothing is known, after the submerging of the promenade deck, nor for sometime before. Before that event, her cries were heard by one witness, who had gained the promenade deck, as they proceeded from the place she still occupied on the deck below. No witness speaks of her afterwards.

"Within a few minutes after the explosion, according to one witness who knew her, she came out of the ladies' cabin and began to call upon her husband. The scene was one of terror, as may be supposed; and, although a crowd was instantly gathered at that part of the vessel, there was not much noise. The surrounding horrors seemed to have subdued the sufferers, and in mute astonishment they contemplated the fate that awaited them. Even the wheels had stopped. Nothing but the sound of the waters, which were somewhat disturbed, and the hasty exclamations of friends, as they sought each other out, and the noise occasioned by such preparations as the more active and prudent felt themselves called upon to make for themselves and others under their charge, were heard. But the voice of Mrs. Ball was heard above all others, calling upon her husband. She ran forward to the chasm caused by the explosion, retraced her steps, and continued to traverse the starboard gangway in search of him, uttering his name in tones so elevated by her agony, that they reached most parts of the vessel, and seem to have made an indelible impression upon all who heard them. Her cry, according to one witness, was a cry of bitter despair and anxious inquiry, and according to all, it was lifted in shrill tones, carrying an irresistible appeal to all hearts.

"Mr. Ball was neither seen nor heard. Mrs. Ball was heard and

seen by many, but no response was heard to her cries, nor was any one seen to approach her for her protection or consolation. Two witnesses, who knew Mr. Ball, saw her, but did not see him. One of them passed and repassed her, in a hurried manner to be sure, but did not discover him. He was neither seen nor heard after the explosion, unless he was the person referred to by two witnesses, who stated the following circumstances: Very shortly after the explosion, a boat was let down on the starboard side of the steamer, into which some persons descended. As the boat was lying below, a gentleman came to that side of the deck, and throwing a coat into the boat, called to those in it to hold fast a moment, and instantly disappeared. He never reappeared, but the next day the coat was found to be a black dress-coat of large size (such was the size of Mr. Ball), and in one of the pockets was discovered a shirt collar, on which was written the name of Ball with some initials, which the witnesses have forgotten.

"Now these are the circumstances of the case. It is not the case of an unknown calamity, nor of one withdrawn from observation, nor is it a case where the calamity was of instantaneous operation. It is a case for testimony, and to be decided on testimony."

Chancellor Johnston proceeds to say that, as the right on the part of Mrs. Ball was derivative, the burden is on the plaintiffs to prove that she was the survivor. But although bound to prove this, it does not follow that they are to prove it to demonstration. We must take the best evidence that the case affords.

Although unwilling to rest on the fact that Mrs. Ball was the last person seen, yet he inclines to the opinion, that in cases of persons lost by a common accident, this should be the ground of decision. He prefers, in the present instance, "to put the case upon the ground of probability arising from the evidence, upon a belief engendered by a combination of circumstances, and upon the superiority of positive proof over conjecture, or even probability.

"The explosion produced its most fatal effects in the gentleman's forward cabin, and that was the first part of the vessel which sank. The after cabin was also much injured. From the forward cabin many persons never escaped. From the after cabin, so far as we know from the evidence, all did escape except Judge Cameron, an infirm old man. But from the description given of its condition, it

is possible that some others may have been detained, either from being hurt or otherwise, until the cabin filled.

"It is *certain* that Mrs. Ball escaped the explosion. Is it certain Mr. Ball did? Mr. Ball engaged a berth in the after cabin. The probability is that he got it, but this is far from certain. The boat came with many persons from Savannah, which may have occasioned Mr. Ball to be displaced and transferred forward. I think, however, it is not probable he was so transferred, because, by an arrangement between the agents in Savannah and at Charleston, they were entitled to let berths, in alternate order, throughout the boat, and we know that some of the passengers who came from Savannah had not the advantage of pre-occupying the after cabin, and that some of the Charleston passengers were let into the cabin; Mr. Ball, therefore, was probably in that cabin. But there is a probability that he was in the forward cabin, and if so, in the greatest danger from the explosion. Mrs. Ball was cleared from that danger *certainly*, Mr. Ball only *probably*. Supposing that he was in the after cabin, still there are chances of his destruction there, from which, we know, Mrs. Ball was totally free on the deck. We know Mrs. Ball was there. *That is certain*. Is it certain that Mr. Ball had hitherto escaped, and was the person who threw the coat into the boat? It may be that he was the man. I think it hardly probable. I should have thought that he was the man if he had been seen at any time near his wife, or had answered to her heart-rending calls. But it is more probable that some one else in the hurry of the moment may have mistaken Mr. Ball's coat for his own, and thrown it into the boat, than that an affectionate husband and brave man, as Mr. Ball is proved to have been, should have heard such appeals as were made to him by his wife, and should at such a time have failed in his duty to her.

"We have indubitable evidence that she had so far escaped; the same evidence, with a moral force which cannot be resisted, convinces us that he must have already perished, or he would have been at her side. I have from all these considerations formed the opinion that Mrs. Ball survived her husband." On appeal (February, 1840), the above decision was confirmed.

§ 729. In 1844, in Massachusetts, a question of survivorship arose as to a father, seventy years old, and a daughter, thirty-three years old, who also perished in the Pulaski, there being no evidence as to

the time and mode of their particular deaths. It was held by the Supreme Court that there was no legal presumption that either survived the other.¹ Yet the court did not go so far as to declare that there could be in no circumstances any decisive presumptions arising from disparity of age. "To a certain extent," said Dewey, J., "we might well go, in applying the principle as to disparity of age. Thus it would be proper and reasonable to hold that one of middle age, and in full vigor of life, would ordinarily survive an infant or child of very tender years; and the same would be alike true as to such person and the man well stricken in years."

§ 730. In 1846, the same points were mooted in New York under the following circumstances: A married woman procured a policy of insurance on the life of her husband, for her own use, unless she died before him, and in that case to the use of her child. She sailed with her husband and child from New York, in 1841, in the steamer President, which was lost at sea, no intelligence being received as to the circumstances of the disaster. Upon the question of survivorship, Chancellor Walworth said: "The insurance money in this case, by the terms of the policy, was made payable to the children of the assured, in case she died before her husband. If her daughter survived her, therefore, it would have been necessary, perhaps, to inquire whether there is any legal presumption that the husband survived his wife, when they have both perished by the same disaster, and when there is no extrinsic evidence to guide the judgment of the court upon this matter of fact. In the cases of *Taylor v. Diplock*, 2 Phill. Rep. 267, *Colvin v. King's Proctor*, 1 Hagg. Ecc. Rep. 92, and in *Selwyn's* case, 3 Idem 748, it appears to have been supposed, in the absence of any evidence to justify a different conclusion, that the court would be bound to presume a survivorship of the husband, when the husband and the wife perish together at sea; upon the ground, I presume, that the greater strength of the male would probably enable him to sustain life the longest in such a calamity. But as there is no presumption of the survivorship of the daughter, in this case, after the death of her mother, and the probability is that they both perished at the same moment, it becomes immaterial to inquire whether it must be presumed that the husband survived his wife. It is sufficient for this case that there is no legal presumption that she survived him."²

¹ *Coy v. Leach*, 8 Metc. 371.

² *Moehring v. Mitchell*, 1 Barb. Ch. Rep. 269.

As to these observations two remarks are to be made. *First*. They are mere *dicta*, as far as concerns the presumption of the husband's survivorship, the point not coming up in this case. *Secondly*. They are made on the basis of English cases, either misunderstood by Chancellor Walworth, or subsequently overruled. "Notwithstanding," says Mr. Best, in 1870,¹ "some questionable *dicta*, the true conclusion from the authorities seems to be that it (the English law) recognises no *artificial* presumption in cases of this nature; but leaves the real or supposed strength of one of the persons perishing by a common calamity, to its natural weight, *i. e.*, as a *circumstance* proper to be taken into consideration by a judicial tribunal, but which standing alone is insufficient to shift the burden of proof. Where, therefore, a party on whom the onus lies of proving the survivorship of one individual over another has no evidence beyond the assumption that from age or sex the individual must be taken to have struggled longer against death than his companion, he cannot succeed."

§ 731. In 1854-55, in England, arose the following case:² A testator, by his will, gave all his real and personal estate to W., in trust for his wife absolutely, "and in case my said wife shall die in my lifetime, then in trust for such of them, my three children, C., F., and A., as shall attain the age of 21, etc., and in case all of them shall die under the age of 21, etc.," then he gave and bequeathed all his property to W. The testator and his wife, and two of the children, F. and A., were drowned at sea, in a shipwreck, having been washed off from the side of the vessel by the same wave. The other child, C., was also drowned, but had been seen alive, after the others were drowned. W., as executor, proved the will. A bill was filed by the administrator of C., as next of kin of the wife, under an asserted intestacy, against W. There was no direct evidence on the question of survivorship as between the husband and wife, but there was considerable medical evidence of a conflicting nature, with reference to the presumptions of the case. The case came up on an appeal from the Master of the Rolls, and was heard before Cranworth, Lord Chancellor, assisted by Wightman, J., and Martin, B. Wightman, J., in the course of his judgment, said: "The question of survivorship is the subject of evidence to be produced before the tribunal which is to

¹ Best on Ev., 5th ed., § 410; see Wh. on Ev., § 1280.

² Underwood v. Wing, 1 Jur., N. S., 169; 4 De G., M. & G. 633; 19 Beav. 439; 31 Eng. Law and Eq. 293.

decide upon it, and which is to determine it, as it determines any other fact. If there be satisfactory evidence to show that the one survived the other, the tribunal ought so to decide; and if there be no evidence, the case is the same as a great variety of other cases, more frequent formerly than at present, where no evidence exists, and consequently no judgment can be formed. On this point; we concur with the Master of the Rolls; we think there is no evidence to show whether the husband or the wife was the survivor. There may be surmise, and speculation, and guess, but we think there is no evidence. We have no doubt that the scientific gentlemen who were examined were perfectly sincere in their opinions, but it is obvious that their opinions were given, having reference to the case of two persons quietly submerged in water, and remaining there until drowned; or in the case of two persons, one being, a swimmer, and the other not, and both thrown suddenly into the water, unincumbered, and acting on certain instinct. The present case is that of two persons clasped together, two boys clinging to one of them, and standing pretty high out of the water on the ship's side, swept off together by an overwhelming wave into a raging sea, and one or other, or both of them, may have been stunned by the violence of the blow from a wave, or they may have struck against a timber of the ship, and may, in fact, have been dead before he or she reached the water at all. How is it possible, under such circumstances, for any tribunal, sitting judicially, to say which of these two individuals died first? We may guess, or imagine, or fancy; but the law of England requires evidence, and we are of opinion that there is no evidence upon which we can give a judicial opinion that either survived the other. The Master of the Rolls is reported, in the report of his judgment, to have said: 'There is, therefore, no evidence to show who was the survivor, and the conclusion of law is that both died at the same moment.' According to our view this is not correct; we think there is no conclusion of law on the subject. In fact, we think it unlikely that both did die at the same moment of time, but there is no evidence to show who was the survivor. Our opinion, therefore, on the questions, with respect to which it was requested, is in favor of the plaintiff." In this, Lord Cranworth concurred.

§ 731. a In 1857 the Supreme Court of Florida accepted the doctrine of *Underwood v. Wing*, and declared, that, "as we understand the doctrine of the common law, it is this, that, when several

individuals perish by a common calamity, and there is no circumstance other than that of age, sex, etc., from which it may be rationally inferred who was the longest liver, no presumption arises upon which a conclusion can be predicated."¹ But it was added, very properly, that, when there are a series of shocks, separated in point of time, age and capacity of endurance might be taken into consideration. The case was decided, however, on the ground that a daughter was shown to have been alive at a point of time subsequent to that at which her father must have perished.

§ 732. In 1860, in a case where the evidence was that the husband and wife perished by a common calamity at sea, *Underwood v. Wing* was affirmed by the English House of Lords, Lord Campbell, Lord Cranworth, Lord Wensleydale, Lord Chelmsford, and Lord Brougham concurring. "The evidence," said Lord Wensleydale, "leaves it in total uncertainty whether the husband died before the wife, or whether they both died at the same instant. Whoever has to maintain any one of these propositions must certainly fail."² Still more emphatic are the comments of Lord Chelmsford. "With respect to the question upon the fact of survivorship when two persons are swept away by a calamity like that which happened in this case, it is possible that there may be evidence to prove distinctly which was the survivor, *as where one of them has been seen struggling with the waves after the other has sunk, and never again appeared above the surface*, or as in this very case, where there can be no doubt that there is evidence to establish satisfactorily that Catharine, the eldest daughter, survived her parents for some short time, though she afterwards perished in the same shipwreck. *But where two persons are at one and the same instant washed into the sea and disappear together, and are never seen any more, it is not possible for any tribunal, called upon judicially to determine the question of survivorship, to form any judgment upon the subject which can be founded upon anything but mere conjecture derived from the age, sex, constitution, or strength of body or mind of each individual, and as our law has not established any rules of presumption for these rare and extraordinary occasions, the uncertainty in which they are involved*

¹ *Smith v. Croom*, 7 Fla. 144.

² *Wing v. Angrave*, 8 H. of L. Cases 213.

leaves no greater weight on one side or the other to incline the balance of evidence either way.”¹

§ 733. In a case before the New York Court of Appeals in 1879² the Court held that there would be no presumption of survivorship in a case where a mother, her married son, and his two children, two and seven years of age, perished on board a steamer, there being no information as to the circumstances of death. “It is not impossible,” said Church, C. J., “for two persons to die at the same time, and when exposed to the same peril under like circumstances it is not as a question of probability very unlikely to happen. At most the difference can only be for a few brief seconds. The scene passes at once beyond the vision of human penetration, and it is as unbecoming as it is idle for judicial tribunals to speculate or guess whether during the momentary life struggle one or the other may have ceased to gasp first.”²

¹ *Wing v. Angrave*, 8 H. of L. Cases, 220. In *Ommaney v. Stillwell*, 23 Beav. 328, the question was whether James Couch, who died in January 1850, was survived by his son Edward, who left England in the Franklin expedition of 1845. Dr. Rae, on the trial testified that he was informed in 1854, by several Esquimaux, that in May 1850, they saw a party of thirty men pulling at a boat, these men no doubt belonging to Sir J. Franklin’s crew. A referee decided that the son survived the father, and this was sustained by the courts. See other cases in *Tidy’s Leg. Med.* (1883), 417; *Medical Times and Gazette*, July 15, 1876.

² *Newell v. Nichols*, 75 N. Y. 78.

³ See same case under title, *Ridgway, In re*, 4 Redf. 226.

In *Fuller v. Linzee*, Sup. Ct. Mass. 1883, 12 Ins. L. J. 809, 869, it appeared that the policy was issued by the company of another state and payments were to be made in that state on the life of F., in consideration of premium paid by the wife, and the promise was to pay the wife or her assignee, or in case of her previous death, to their children. A vessel containing the husband and wife was afterwards lost returning from Calcutta, and never was heard from. It was held, that the contract should be regarded in a measure as the language of one seeking to provide in this way for his wife and children, and that if the children had survived the parents, it would be a question whether the burden of proof would be on them to establish the survival of their mother, to support their claims, but in any action to establish the survival of the wife for the benefit of her kin, the burden is on the party undertaking to establish it. It was also held, that the contract was to be construed according to the laws of New Jersey, and that the interest of the wife under those laws was contingent on her survival of her husband, and without proof of such survivorship, her kin could show no claim. It was also held, that in the absence of any right by the wife or surviving child, the insurance money belonged to the husband’s estate.

§ 734. *Summary of cases.*—The conclusions we may accept, after a scrutiny of the above cases, are as follows:—

(1) When persons ranging between infancy and extreme old age perish by a common shipwreck, and when there is no information as to either of them subsequent to the shock, no such presumption can be drawn from differences of age or sex as will enable a court to give judgment for a plaintiff seeking to recover on the claim of survivorship.

(2) When, however, one of the parties is in extreme infancy, or in very advanced and decrepid old age, so as to be incapable of taking care of himself, we may infer, as a presumption of fact, that such person died before another not so disabled.

(3) The law only refuses to draw a presumption where there is no evidence at all as to the parties subsequent to the shock. If there is any evidence, no matter how slight, leading to the conclusion that one of the parties was seen alive subsequent to a period when the other was probably drowned, this is ground on which a jury can find survivorship. And in aid of such evidence, proof of the distinctions of age, health, and sex is admissible.¹

§ 735. 2d. *Asphyxia.*—Where the parties are in the same circumstances, the female is presumed to have survived the male, from the fact that women consume less oxygen than men, and hence can exist longer on the same amount of air. In poisoning by carbonic acid gas, the chances of survivorship are with the female. In 19 out of 360 cases of asphyxia by carbonic acid, which took place in Paris during 1834 and 1835, a man and woman were asphyxiated together; of these, three only were saved; and these three were females.

§ 736. 3d. *Heat.*—The young and old bear heat better than those in the prime of life. The difference between the sexes in the capacity to endure heat is not well ascertained. Fodéré relates a case where an Englishman and his daughter of seven years of age crossed the desert of Syria to the Persian Gulf, each being in precisely the same

¹ See as tending to these conclusions: *Mason v. Mason*, 1 Mer. 318; *Barnett v. Tugwell*, 3 Beav. 232; *Selwyn, In re*, 3 Hag. N. S. 748; *Satterthwaite v. Powell*, 1 Curt. 705; *Durrant v. Friend*, 5 D. G. & S. 343; *Sillick v. Booth*, 1 Y. & C. 117; *Dowley v. Winfield*, 14 Sim. 277; *Wainwright, In re*, 1 Sw. & Tr. 257; *Ewart, In re*, Id. 268; *Nichols, In re*, L. R., 2 P. & D. 361; *Phene's Trusts*, L. R., 6 Ch. 145; *Scruton v. Pattilo*, L. R., 19 Eq. 369; *Wollaston v. Berkeley*, L. R., 2 Ch. D. 213; *Robinson v. Gallier*, 2 Woods C. C. 478; *Newell v. Nichols*, 75 N. Y. 78.

circumstances; the father perished, but the child reached her journey's end in safety.¹

§ 737. 4th. *Cold*.—Middle aged men endure cold much better than young children or old persons. Men bear cold better than women. The amount of clothing and state of health of the parties is to be taken into consideration. Where spirituous liquors are taken in excess, they make the cold more intolerable; but if taken in moderation, they help to resist its effects.

§ 738. 5th. *Starving*.—The aged require less nourishment than adults, and adults less than children, so that the probability of survivorship is in favor of the more aged of different persons, where death is from starving. Corpulent persons also are apt to live longer than those of emaciated frames. Where one person has had access to water, this is presumed to have prolonged his life. Active exertion to escape from the perils of their situation hastens the hour of death, so that those who possess the most passive endurance are supposed to live the longest.

§ 739. On Friday the 13th of April 1856, the mines known as the Blue Rock Coal Mines, situated on the west bank of the Muskingum river, in Harrison township, Muskingum Co., Ohio, fell in. At the time of the catastrophe some twenty persons were at work, of whom all but four succeeded in making their escape. The names of the four who were imprisoned in the mine were William Edgell, James Pearson, James Gatwood and Edward Savage. Edgell was twenty years old, Pearson thirty-three, Gatwood twenty-two and Savage sixteen. They were working at the time in a well-defended portion of the mine, and consequently escaped any immediate injury. After satisfying themselves that there was no prospect of an early escape from their confinement, they established themselves in one of the compartments scarcely large enough to contain them all, and made preparations to die together, after their means for sustaining life should be exhausted. The only food they had with them were the dinners for two persons that had been left by some of the other hands. This was shared between them and made two scanty meals. They were all thinly clothed, none of them having more than a shirt and pair of trowsers, and the sleeves of their shirts had been torn off, as is customary with miners, to prevent them from interfering with their work. Two of the men, however, succeeded in finding

¹ Guy's Med. Jur. 401.

jackets that afforded some warmth to the upper part of their bodies. They were well supplied with oil, but after their lamps had been replenished some nine or ten times, they ceased to burn, and the miners were left in total darkness. In this condition of things the men, huddled together upon a bed of dirt, forced to take turns in occupying the middle position as the only place of comfort, suffering intense anguish from hunger and cold, looked forward to death as their only escape. The water which they had with them soon gave out, when very fortunately they found not far off a reservoir of water strongly impregnated with copperas. The supplies of this which they kept constantly by them, seemed to afford considerable nourishment, and were undoubtedly the means of preserving their lives. The intense pains of hunger which affected them the first two or three days afterwards in a great measure disappeared, attributable, as the men thought, to their liberal use of the copperas-water. They were all of them delirious at different times, experiencing the dreams and visions of tempting food that so often accompany starvation. The oil which they had with them was used on two occasions as nourishment, but proved so nauseating that it was not again tried. They remained in this condition, gradually growing weaker, but still all of them able to stir about, until after two weeks had elapsed, when they were rescued by their fellow workmen and neighbors, having been entombed in their prison fourteen days and thirteen hours.

§ 740. As indicating one of the effects of the copperas-water, and as one of the elements in this remarkable prolongation of life, it may be observed that the sufferers were "constipated during the entire time of their imprisonment. After their rescue a healthful action was restored by means of clysters, and with no great difficulty."

"Considering all things," is a statement made in a pamphlet report of the condition of the parties when brought out, "Edgell looks remarkably well; being a fleshy young man; he is not much emaciated. Pearson and the boy Savage are somewhat reduced; Gatwood very much so and very weak."

§ 741. 6th. *Poison*.—Dissection alone gives here very little aid. The marks on the body are often the most unequivocal in cases where the suffering was the longest protracted. Cases are well known in

which one person gave another poison, and afterwards took it himself, and in which the giver survived.

§ 742. 7th. *Crushing or burying alive*.—Here again we fall back on the general consideration of the age, the corporeal energy, the sex, and the position of the corpse. Younger persons, in this kind of death, survive the older. After the Calabrian earthquake, the children who were buried alive were found to have survived their parents. Where the question is of continued respiration, the presumption of survivorship is with children, with whom loss of breath can be longest borne. So also when the lungs are sound, in which case a longer living will be presumed than where the lungs are weak, so as to have difficulty in obtaining the necessary air. Men are supposed, from this reason, in such cases to survive women, though this has been much controverted.¹

Signs of struggling at extrication indicate a longer continuance in life than where the deceased appears to have at once succumbed.

§ 743. 8th. *Childbirth*.—Where the mother and child have both perished in childbed, the presumption is that the mother survived, for there is *prima facie* evidence of stillbirth, and a still stronger probability that the mother was unable to render the child any assistance towards its preservation, and hence the child would die first. A case is mentioned² where the succession to a large landed estate was thus involved. The mother and child both died during delivery. If the latter survived, the father was entitled to the property, but if the former, her relatives were entitled to it. It was proved, on trial, that the child was born alive, when the question was decided, that the child was the survivor.

When a mother died of a nervous attack, during, but before the birth, and when the child was in a good position, and there was no mechanical hindrance to the birth, the survivorship was ascribed to the child.³

That an unborn child can survive its mother, and even live when cut from her body after her death, is proved by many cases.⁴ Cases even remain on record in which, after the execution, by hanging or otherwise, of pregnant women, children, at the distance of one day, were taken alive from their bodies.

¹ See Henke's *Zeitschrift*, B. 75, s. 117.

² Beck's *Med. Jur.*, 11th ed., p. 638.

³ Henke's *Zeitschrift*, B. 75, s. 109.

⁴ *Ibid.*

§ 744. *Children dying in childbirth*.—Dr. Liman¹ mentions a question of survivorship between two newly born twins, which was decided by the fact that one child remained, at the time of injury, attached to the mother by the umbilical cord, while the other had been severed.

§ 745. 9th. *Wounds*.—Questions under this head very rarely arise. As an illustration, we may give the following:—

Dr. Casper, and after him Dr. Liman, supposes the following case. A. is killed by a thrust of a sabre on the head, B. by that of a bayonet in the heart, and C. by a shot which has torn open the jugular vein. Here the presumption would be that B. died first; that C. bore the loss of the blood a little longer; and that A. resisted the deadly influence of the blow the longest of the three.

III. TESTS WHERE BODIES ARE FOUND DEAD.

§ 746. Where the wounds, in case of violence, are the severest, there the earlier death is presumed.

Stiffness, coldness, discoloration, degree of putrefaction, are all to be taken into account.

As to stiffness, there are many minor distinctions to be observed. The process of stiffening is greatly affected by the age of the deceased, and by the prior state of his body. Was he strong and muscular, or meagre and feeble? With persons of powerful muscles, this stiffness is far more rigid than with those of weaker frame. The stiffness gives way after very varied intervals to that suppleness and softness which is the preliminary of putrefaction. Generally, it is not observable after corruption is begun, which is mostly early in cases of poisoning, and death by drowning and lightning.

The process is hastened by lethal causes which act on the brain, and delayed by those which are accompanied by the loss of blood.

Where corruption has proceeded furthest, there the death can be presumed to have been earliest.

¹ 2 Liman's Casper (1871), 17.

CHAPTER V.

MEDICAL MALPRACTICE.

I. GENERAL CONSIDERATIONS, § 750.

II. COMMON LAW PRACTICE, § 754.

- 1st. Criminal Prosecutions, § 754
- 2d. Actions for torts, § 766.
- 3d. Dentists, § 773.
- 4th. Druggists, § 774.

I. GENERAL CONSIDERATIONS.

§ 750. ACCORDING to Casper, malpractice is imputable in cases where the practice adopted is in conflict with general rules prescribed for similar cases by cotemporary medical science and adopted in cotem-
porary medical experience. By Saxinger, in Maschka's Handbuch, III., 663, this definition is objected to because it cannot be applied in many cases of malpractice, and because there are no general rules applicable to every case. The physician, he argues, would be com-
pelled, if this standard were made obligatory, to surrender all inde-
pendent activity; the further development of medical science would be effectually stopped. But in any view it must appear, to sustain process against a physician for malpractice, to show, 1st, that the injury to the health or body resulted from bad treatment of the case by the physician; and 2d, that this evil result might have been fore-
seen and avoided by a competent practitioner. The answer to this latter question will be affected by the position of medical science at the time, and often by the peculiar circumstances of the case.¹

§ 751. Malpractice can only be affirmed where the physician has set aside principles established in the school of which he professes to be a member,² and neglected to employ means which are usually

¹ Böcker, *Gericht. Med.*, § 58 etc.

Among the foreign treatises on malpractice are *Kunstfehler der Aerzte von Dr. Otto Oesterlen*, in Maschka's Handbuch, 1882; Schürmayer, "Die Kunstfehler der Medicinal personen," 1838; E. Lelorrain, "de la responsabilité du médecin;" Virchow, *Kunstfehler der Aerzte* 1879.

² 2 Whart. on Neg., §§ 730 *et seq.*

employed by respectable physicians of his class and locality under similar conditions.

§ 752. In the treatment of internal diseases, the physician, according to both Casper and Böcker, can not be held guilty of criminal carelessness for failing to use a particular remedy as to which the authorities are not agreed. But when it can be proven that there is great probability that the injurious effects of a poison might have been prevented by the use of a certain antidote, the physician is guilty of criminal carelessness when not employing it.

It is asserted by Casper that a physician "should be liable to punishment if in a given case he departs entirely from the treatment which the great majority of physicians of his time adopt in such cases, and which the great majority of medical authorities recommend for such cases." Great difficulty might arise from this test. It would be impossible, for instance, for a physician to stop to inquire, in any given case, what is the practice of the majority of his contemporaries; and if he should, he has often no means of answering the question.

This principle would also render homœopathists and physicians adopting new departures in medicine, liable to criminal prosecution, when in point of fact some of the great reforms now accepted on all sides in medicine were on their introduction held by only small and often proscribed minorities. Besides, it would be impossible to collect the views of the great majority of authors upon the given case. Many may not have noticed the particular case in point, and much difference of opinion will be found among those who have. Hence the position now generally accepted is that a physician is not responsible for damages, if he acts in accordance with the views of his particular school, his patient employing him as belonging to such school.

§ 753. In determining the liability of medical men for malpractice, it is important to keep in mind the great difficulty and delicacy of their position. The case is thus stated by one of the most eminent German physicists: The human body is an organism of extraordinary complication, numerous and important parts of which are inaccessible to examination or even inspection, assuming, in addition, in each particular person distinctive peculiarities; and yet changing its type and characteristics day after day. Diseases accelerate and give a new inclination to these changes, but diseases themselves are in a constant state of change. Successful as modern science has been in tabulating the actions of disease in a mass, the practical physician can only

in very rare cases approach certainty in his diagnosis. He must frequently content himself with the grouping of symptoms, and with the best induction from them he can make. The science, also, which has to deal with this mutable material, is itself of all sciences the most mutable. Diseases well known in old times have disappeared, and new diseases have taken their place; others, equally well known in old times, have been shown, by the more perfect instruments now at hand, to have been radically misunderstood, and to require an entire change of treatment. Of new diseases may be mentioned cholera, diphteria, cerebro-spinal meningitis; while new agencies have enabled new information, before inaccessible, to be obtained in respect to diseases of the throat, the eye, and the ear. Infectious diseases, also, assume a new aspect since the sources of infection have been traced. So rapid and complete are the processes of change that only a few years' retirement from study will make even a capable physician unfit for practice. Even when such a physician keeps himself acquainted with the current literature of his profession, he may yet find himself behindhand in technical operations or curative processes of recent introduction. So strongly is this felt in Germany that surgeons in the army are required to renew from time to time course of instructions in some one of the great medical schools. Even a physician at the head of his profession, so continues Oesterlen, in the article already cited, who may be thoroughly prepared for practice, may be thrown into situations in which he cannot make full use of his opportunities. He may be compelled to undertake an operation with insufficient instruments or insufficient assistance. He may be forced suddenly to prescribe without time or means for a thorough diagnosis; he may be at the time exhausted by severe labor and in this condition be required to attend the bed of a patient suddenly attacked with disease and surrounded by friends in the clamor of agony and horror. It was acutely said by Montaigne that it is the good fortune of physicians that the sun illuminates their successes and the grave covers their faults. But this is no longer the case. The sun now exposes the physician's blunders with a fulness unknown in old times, and the grave is now opened to determine how far these blunders caused death. Much in our present practice, says Oesterlen, in the paper already referred to, differs widely from what our predecessors or even our teachers held to be necessary or allowable. As illustrations may be mentioned the treatment of fever with cold water; the abandonment

of blood-letting in cases of inflammation of the lungs; the extirpation of certain portions of the womb to which multitudes of women owe their lives; the extirpation of the larynx; as well as numerous other operations which were unknown a generation back. Not only this, but eminent cotemporaneous physicians differ in their treatment of disease. For catarrh of the lungs one eminent physician gives fat and milk, another gives azotised food and wine. Inflammation of the orifice of the bowels is treated by one physician with attempts to regulate evacuations, by another with opiates which stop all evacuations. For the same disease warm applications are recommended by one, cold by another. Absolute rest is recommended by one physician for nervous prostration; active employment in some new line by another.¹

¹ "It is not only," said Sir James Paget, in his opening address as President of the international medical congress in London in 1881, "that the pure science of human life may match with the largest of the natural sciences in the complexity of its subject-matter; not only that the living human body is, in both its material and its indwelling forces, the most complex thing yet known; but that in our practical duties this most complex thing is presented to us in an almost infinite multiformity. For in practice, we are occupied, not with a type and pattern of the human nature, but with all its varieties in all classes of men, of every age and every occupation, in all climates and all social states; we have to study men singly and in multitudes, in poverty and in wealth, in wise and unwise living, in health and all the varieties of disease; and we have to learn, or at least try to learn, the results of all these conditions of life, while, in successive generations and in the mingling of families, they are heaped together, confused and always changing. In every one of all these conditions man, in mind and body, must be studied by us; and every one of them offers some different problems for inquiry and solution. Wherever our duty, or our scientific curiosity, or in happy combinations, both, may lead us, there the materials and there the opportunities for separate original research."

As illustrations of the gradual evolutions of medicine, the London Quarterly Review for July 1883, gives the following: "The medicinal uses of cinchona bark were known first to the indigenous inhabitants of the Peruvian Andes, where the trees are native and where the ague is common; and it was the Jesuits who introduced it widely into Europe (1630) and the East. The story of the reception of this remedy by the medical profession has its unpleasant side. The arch-stupidities of the Paris faculty, who still live for the amusement of the world in Molière's comedies, opposed it with their united weight. Court physicians in other European capitals than Paris assailed it with abuse, and no one wrote more nonsense about it than Gideon Harvey, the physician of Charles II. The new remedy, apart from its merits, fell in with the views of the Paracelsists and disagreed with the views of the Galenists, and was recommended or con-

II. COMMON LAW PRACTICE.

§ 754. 1st. *In criminal prosecutions.*—The accountability of medical men has been a fruitful source of lego-medical discussion, and in

denmed accordingly. Even the great Stahl, nearly a century after cinchona was first brought to Spain, would have none of it, and in his servitude to his theories, he even went so far as to make use of Gideon Harvey's ignorant tirade against the drug by reprinting it in German. As late as 1729 an excellent physician of Breslau, Kanold, whose writings on epidemics are still valuable for their comprehensive grasp, declared in his last illness (a 'pernicious quartan') that he would sooner die than make use of a remedy which went so direct against his principles. The world, of course gave little heed to these inane disputationes: the value of cinchona was beyond the power of the faculty either to discover or to obscure."

"As a contrast to these unmitigated horrors, let us take the proportions of sickness and mortality among the German troops in the Franco-German war. The Germans crossed the Rhine in the summer and autumn of 1870 to the number of 913,367. Of these there perished from one cause or another, 44,890; including 17,572 who were killed in battle, 10,710 who died in hospital of their wounds, and 12,253 who died of sickness and pestilence. The relatively small amount of sickness in the campaign is referred to with just pride by Professor Virchow, in an address from which we take the figures, and which we shall notice further. It will be better appreciated by comparing the figures for the Crimean War and for the American Civil War. In the former the French lost in all 95,615 men; of these only 10,240 fell before the enemy, about the same number died of their wounds, and the enormous residue of 75,000 fell victims to camp sickness and pestilence. In the American Civil War, it is estimated that 97,000 deaths occurred in battle or subsequently from wounds received, and that 184,000 died of sickness. 'What immeasurable suffering and pain!' exclaims Virchow 'What a sea of blood and tears is contained in these figures! How much, too, of defective practice, of prejudice, of erroneous opinion!' The lesson of these calamities, he shows, was not thrown away upon the citizens of the United States; their gigantic medical history of the war has been a mine of scientific information and of practical experience for the military surgery and hygiene of later times. When the Germans entered on the war with France, says Professor Virchow, they had the well-digested experience of two recent campaigns of their own; they had also the inestimable experiences of the Americans, and, finally, they had German science—'wir hatten die deutsche Wissenschaft.'"

"The mean and annual death-rate among British troops in India, has fallen within twenty years from 69 per 1000 to 17·62 per 1000. 'Were there no other result than this,' says Sir Joseph Fayrer, 'it is a triumph such as has been achieved by no other department of knowledge.'"

"Again, the modern progress of medical science and practice has been greatly dependent on facilities which are in themselves more technical or mechanical than scientific in the scholarly sense. Chloroform, the ophthalmoscope, cheap and handy microscopes, the laryngoscope, improved cutlery, new disinfectants,

early times was the subject of much variety of judicial, as it is still of popular, sentiment. At one time so great was the rigor with which the courts were disposed to treat irregular practitioners, that it was held, that, while if a potion or plaster administered *bona fide* by a licensed physician or surgeon unexpectedly killed the patient, this was but misadventure, yet if the defendant was not a regular physician or surgeon he was guilty of manslaughter.¹ Thus, where an old woman, who sometimes dealt in medicines, gave to a party asking for an emetic a solution of white vitriol which caused his death, Bayley, J., said: "I take it quite clear, that, if a person not of medical education, in a case where professional aid might be obtained, undertakes to administer medicine which may have a dangerous effect, and thereby occasions death, such person is guilty of manslaughter. He may have no evil intention, and may have a good one; but he has no right to hazard the consequence in a case where medical assistance may be obtained; if he does so, it is at his peril." The prisoner was convicted.² But even as far back as Lord Hale, the distinction between regular and irregular practitioners began to be doubted, and that learned but quaint judge did not hesitate to ascribe to the doubter greater antiquity than the doctrine, since as he said, it was clear that physic and salves were in use before physicians and surgeons.³ And now, in England and in this country, the great weight of authority is that no such distinction exists.⁴

§ 755. From the leading cases, which will be presently given in full, the following propositions may be extracted:

1. If the defendant acted honestly, and used his best skill to cure, and it does not appear that he thrust himself in the place of a competent and elegant pharmacy, and a hundred other things, have been added successively to the resources of the practitioner, until the face of practical medicine and surgery has been entirely changed. The practitioner of to-day, conscious of his abundant mechanical privileges and of the inventive skill at his command, is apt to look down as from a lofty height upon the practice of an earlier generation. The history of the science, however, makes it abundantly clear, that the superiority has lain in all ages more with the powerful head than with the dexterous fingers, and that philosophical grasp, is the quality that mankind not only most admires, but also finds most useful in the long run."

¹ Brit. C. 5; 4 Inst. 251; Wilcock's L. Med. Prof. Append. 227.

² R. v. Simpson, 4 C. & P. 407.

³ 1 Hale 429.

⁴ In Maschka's Handbuch der Gerichtlichen Medicin, 3d vol. (Tübingen, 1882) pp. 589 *et seq.*, the subject of medical malpractice is discussed in great detail.

petent person, it makes no difference whether he was at the time a regular physician or surgeon or not.

2. A medical man is to be tested by the school to which he professes to belong, and as a member of which he is employed. He cannot be convicted of neglect if he uses the remedies and takes the course usual with intelligent and respectable physicians of that school under circumstances similar to those under which he is placed.

3. To sustain a conviction, malice or negligence must be proved by the prosecution beyond reasonable doubt.

4. A defendant who, with competent knowledge, makes non-negligently a mistake in a remedy, is not answerable; but it is otherwise when a violent remedy, shown to have occasioned death, is recklessly administered.

5. The application, by an ignorant person, of remedies which he knows or ought to know are dangerous, involves him in criminal responsibility.

6. The mere fact that a remedy is novel is not ground for a conviction in case it operates prejudicially to the patient. All the great alleviating and curative remedies introduced in recent years were at one time novel. To sustain a conviction it must be shown beyond reasonable doubt that the remedy was negligently applied.

7. When a medical man is charged with negligence, his physical and mental state are important ingredients in the question of responsibility. A man subject to color-blindness cannot be charged with negligence in not perceiving a signal unless it appear that, conscious of this infirmity, he accepted a position for which he was thus rendered incapable. A mechanic is not chargeable with negligence in failing to lift a weight for which his bodily strength was inadequate. A physician, on the same line of reasoning, can set up bodily or mental exhaustion for failure adequately to perform his duties in all cases in which, knowing this incapacity, he did not negligently put himself in a position for which he was not fitted. No negligence is imputable for that which it was not in the party's power to avoid. The only question is as to the burden of proof. It is argued on high authority,¹ that it is part of the case of the plaintiff (or prosecutor as the case may be) to show that the party thus charged with negligence was not at the time unfitted for the task in attempting which the negligence is said to have occurred. But the better view² is that such incapacity

¹ See Oesterlen, op. cit. 611 *et seq.*

² Whart. on Ev., § 359.

is a matter of defence, (1) Because it is exculpatory ; (2) Because it involves a matter peculiarly within the defendant's own knowledge. This rule applies to both criminal and civil proceedings.¹

§ 756. In 1807, before Lord Ellenborough, Chief Justice of the King's Bench, John Williamson, a man widwife, seventy-five years of age, who was shown to have been in the habit of acting as such among the lower classes of people, though not a regularly educated *accoucheur*, was tried for the murder of Ann Delacroix, of Westminster. From the evidence of the female nurse, it appeared that the deceased had been delivered by the prisoner on Friday, September 17th, of a male child, and on the following Sunday was attacked with a *prolapsus uteri*. This was mistaken by the prisoner for a remaining part of the *placenta*, which had not been brought away at the time of delivery ; and upon attempting to tear away the *prolapsus eterus* by force, he lacerated the uterus and caused the death of the patient. It was proved on the one hand, by a number of medical witnesses, that there must have been great want of skill in the prisoner, and on the other, by several women whom he delivered, that he always acted with kindness and attention, and, as far as they could judge, with skill. The prisoner, in his defence, said that he had acted according to the best of his judgment. Lord Ellenborough took from the jury the question of murder, and, in submitting to them that of manslaughter, said : "To substantiate that charge, the prisoner must have been guilty of criminal misconduct, arising either from the grossest ignorance or the most criminal inattention. One or other of these is necessary to make him guilty of that criminal negligence and misconduct which are essential to make out a case of manslaughter. It does not appear that in this case there was any want of attention on his part ; and from the evidence of the witnesses on his behalf, it appears that he had delivered many women at different places, and from this he must have had some degree of skill."² It would seem that, having placed himself in a

¹ As is said by Virchow, an eminent German physician, prosecuting officers are too apt to suppose that a physician can never be sick, can never be exhausted, must always have all his faculties at command, must be able to give his whole time, with faculties in full power to a patient.

² In a subsequent reference to this same case it is stated that he had attended the deceased in seven previous confinements with success, and that he attended in this instance at her request. 4 Car. & P. 398.

dangerous situation, he became shocked and confounded. I think that he could not possibly have committed such mistakes in the exercise of his unclouded faculties; and I own that it appears to me, that if you find the prisoner guilty of manslaughter, it will tend to encompass a most important and anxious profession with such dangers as would deter reflecting men from entering into it." The result was an acquittal.¹

§ 757. In 1829 an unlicensed practitioner, named Van Butchell, was indicted for manslaughter, by thrusting "a round piece of ivory into and up the fundament and against the rectum of the deceased, William Archer, thereby making one perforation, laceration and wound, of the length, etc., in and through the rectum of the said William Archer." It was proved by Mr. Lloyd, an eminent surgeon, that he opened the body of the deceased, and found a portion of the *ileum* adherent to the rectum, and that on separating this adhesion, he discovered a small hole perforated through the rectum. Upon cross-examination he said that operations must sometimes fail, notwithstanding they might be skilfully performed; and he added that he himself had operated in extracting an encysted tumor from the breast of a woman at a time when she was pregnant, and who soon afterwards died; and he and many other surgeons thought that correct practice, though he admitted that the propriety of the operation was doubted by others. The counsel for the defence offered to prove that the defendant had a regular medical education, when Hullock, B., said that this was not material, and in summing up said: "This is an indictment for manslaughter, and I am really afraid to let the case go on, lest an idea should be entertained that a man's practice is to be questioned whenever an operation fails. In this case there is no evidence of the mode in which this operation was performed; and even assuming for the moment that it caused the death of the deceased, I am not aware of any law which says that this party can be found guilty of manslaughter. It is my opinion that it makes no difference whether the party be a regular or an irregular surgeon. Indeed, in remote parts of the country many persons would be left to die, if irregular surgeons were not permitted to practise. There is no doubt that there may be cases where both regular and irregular surgeons might be liable to an indictment, as there might be cases when, from the manner of the operation, malice might be inferred.

¹ *R. v. Williamson*, 3 C. & P. 635, note. See *Lynch v. Davis*, 12 How Pr. 323.

All that the law books have said has been read to you, but they do not state any decisions, and their silence in this respect goes to show what the uniform opinion of the lawyer has been upon this subject. As to what is said by my Lord Coke, he merely details an authority, a very old one, without expressing either approbation or disapprobation; however, we find that Lord Hale has laid down what is the law upon this subject. This is copied by Mr. Justice Blackstone, and no book in the law goes any further. It may be that a person not legally qualified to practise as a surgeon may be liable to penalties, but surely he cannot be liable to an indictment for felony. It is quite clear you may recover damages against a medical man for want of skill; but, as my Lord Hale says, ‘God forbid that any mischance of this kind should make a person guilty of murder or manslaughter.’ Such is the opinion of one of the greatest judges that ever adorned the bench of this country, and his proposition amounts to this, that if a person, *bona fide* and honestly exercising his best skill to cure a patient, performs an operation which causes the patient’s death, he is not guilty of manslaughter. In the present case no evidence has been given respecting the operation itself. It might have been performed with the most proper instrument, and in the most proper manner, and yet might have failed. Mr. Lloyd has himself told us that he performed an operation the propriety of which seemed to have been a sort of *vexata questio* among the medical profession; but still it would be most dangerous for it to get abroad, that, if an operation performed by either a licensed or unlicensed surgeon should fail, that surgeon would be liable to be prosecuted for manslaughter. I think that in point of law this prosecution cannot be sustained; and I feel bound to say, that no imputation whatever ought to be cast upon the gentleman who is now at the bar in consequence of anything that has occurred.” The prisoner was acquitted.¹

§ 758. In 1830 and 1831, John St. John Long, who had acquired great popular celebrity as a practitioner in cases of consumption, even among the more aristocratic and educated portions in London society, was tried on two successive indictments for manslaughter. In the first case the indictment charged him with sponging the back of Catharine Cashin with an inflammatory and dangerous liquid, which produced inflammation and consequently death.

Park, J., in summing up, said: “The learned counsel for the pros-

¹ R. v. Van Butchell, 3 C. & P. 629.

ecution truly stated, in the outset, that whether the party be licensed or unlicensed is of no consequence, except in this respect, that he may be subject to pecuniary penalties for acting contrary to charters or acts of Parliament. But it cannot affect him here. For this I have the authority of that great and eminent person, Lord Chief Justice Hale, who has expressly said, that, though physicians and surgeons, if they are not licensed, may be subject to penalties, yet they are not answerable criminally on that account. His phrase is, ‘God forbid that any mischance of this kind should make a person guilty of murder or manslaughter.’ And, therefore, licensed or unlicensed, certainly does not signify. I agree with my learned brother, that what is called malapraxis in a medical person is a misdemeanor; but that depends upon whether the practice he has used is so bad that everybody will see that it is malapraxis. The case at Lancaster differs from this case. I have communicated with Lord Chief Justice Tindal, who tried that case, and he informed me that the man was a blacksmith, and was drunk, and was so completely ignorant of the proper steps, that he totally neglected what was absolutely necessary after the birth of the child. That certainly was one of the most outrageous cases that ever came into a court of justice. I would rather use the words of my Lord Ellenborough, in the case of *Rex v. Williamson*. He says, that ‘a medical man is not to be charged with manslaughter unless he has been guilty of criminal misconduct, arising either from the grossest ignorance, or the most criminal inattention.’ And this is important here; for, though he be not licensed, yet experience may teach a man sufficient; and the question for you will, by and by, be, whether the experience this individual acquired does not negative the supposition of any gross ignorance or criminal inattention. The case quoted from the institutes of Lord Coke, who lived upwards of two hundred years ago, occurred at a time when there were very few cases of the kind, and was deemed to be a case of manslaughter. But I do not derogate from his high and illustrious character, when, as far as criminal law is concerned, I set against it the authority of my Lord Chief Justice Hale, on whom, when authority is quoted, reliance is always placed. He says: ‘If a physician gives a person a potion without any intent of doing him any bodily hurt, but with the intent to cure or prevent a disease, and, contrary to the expectation of the physician, it kills him, this is no homicide; and the like of a chirurgeon;’ and he quotes the Year Book, 3 Edw.

III. And he goes on to say : ‘ And I hold their opinion to be erroneous’ (evidently alluding to my Lord Coke), ‘ who thinks if he be no licensed chirurgeon or physician that occasioneth this mischance, that then it is felony ; for physic and salves were before licensed physicians and chirurgeons.’ And he proceeds further, and says : ‘ These opinions may serve to caution ignorant people not to be too busy in this kind with tampering with physic, but are no safe rules for a judge or jury to go by.’ I say the same, that the public weal is deeply interested in preventing ignorant persons from tampering with these subjects. It is true his next reason, about the want of surgeons in the country, does not apply here, because, in London, all persons can obtain the assistance of the best men, however poor they are. The question is, whether there was gross ignorance in this gentleman, or scandalous inattention in his treatment of this lady. * * * There is clear proof that the prisoner did the act which shortened Miss Cashin’s life. But that does not prove the case, unless you think that there was gross ignorance, or inattention to human life to be inferred from it. * * * And there is this observation to be made of him throughout, that he seems to have been living in a fashionable part of the metropolis, and attended by right honorable persons ; and it would be against his interest to act ignorantly and carelessly. It appears, with respect to Miss Cashin, that he did not go to seek her, and this will be for you to take into your consideration. With respect to the application of the mixture, if he commanded the woman to use it, it is the same as if he used it himself. Perhaps, from the evidence, you will think that the act caused the death ; but still the question recurs, as to whether it was done either from gross ignorance or criminal inattention. No one doubts Mr. Brodie’s skill, but that is not quite the question ; it is not whether the act done is a thing that a person of Mr. Brodie’s great skill would do, but whether it shows such total and gross ignorance in the person who did it, as must necessarily produce such a result. On the one hand, we must be careful and most anxious to prevent people from tampering in physic, so as to trifl with the life of man ; and, on the other hand, we must take care not to charge criminally a person who is of general skill, because he has been unfortunate in a particular case. It is God that gives, man only administers medicine, and the medicine that the most skilful may administer may not be productive of the expected effect ; but it would be a dreadful thing if a man were to be called in question criminally

whenever he happened to miscarry in his practice. These are things for your consideration when you are considering whether a man is acting wickedly ; for I call it acting wickedly when a man is grossly ignorant, and yet affects to cure people, or when he is grossly inattentive to their safety. With respect to the evidence on the part of the prisoner, all the witnesses that he has called have spoken of him as being perfectly satisfied with his skill, attention, and behavior in every respect. * * * It is also to be remarked, that one of these witnesses is himself a surgeon, who lived for thirty-six years in a hot climate, and he expresses himself perfectly satisfied. You will take the whole case into your consideration, and if you think there was gross ignorance or scandalous inattention in the conduct of the prisoner, then you will find him guilty ; and if you do not think so, then your verdict will be otherwise."

The jury, after some deliberation, found the prisoner guilty, and he was subsequently sentenced to pay a fine of 250*l.* to the king.¹

§ 759. Soon afterwards, Long was tried before Bayley, B., Bolland, B., and Bosanquet, J., for manslaughter in causing the death of Colin Campbell Lloyd, wife of Edward Lloyd, by causing her to inhale certain noxious and injurious vapors, and sponging her breast and chest with a corrosive and inflammatory liquid, which produced a gangrenous sore. The witnesses called on the part of the prosecution were Captain Lloyd, the husband of the deceased ; Mrs. Campbell, a relation, at whose house she was staying ; Mr. Campbell, Mr. Vance, Mr. Brodie and Mr. Franklin, surgeons.

Mr. Brodie, afterwards Sir Benj. Brodie, in his examination, stated that he saw the deceased at the request of Mr. Vance on the 29th of October, and saw a large sloughing ulcer, which he believed might have been produced by rubbing a corrosive liniment into the parts on the 10th of October ; that he did not know of any disease which should lead a person to apply a liniment with the intention of producing such an effect. On his cross-examination, he said : " It is and always has been the practice to produce counter-irritation, and the same application may be beneficial to one person and injurious to another, according to the habit and constitution. The effect of a liniment or blister, or any other external irritant, as we call them, sometimes goes beyond the effect we intend, and the most scientific practitioner may often be deceived in his expectations ; he cannot

¹ *R. v. Long*, 4 C. & P. 398.

always calculate to a nicety. I do not recollect at this moment any instance in which death has ensued from a blister properly applied, but I suppose it may happen. I suppose over-exercise would produce over-irritation where a blister had been applied. In treating a wound, I should judge from the appearances and state of the patient; I think it would be desirable, under such circumstances, to know the nature of the application, but I do not think it would lead to any great difference in the treatment. In cases of poison, we do not apply the same remedy, especially when it has been taken into the stomach. As to external applications, I do not think a surgeon would judge so much from what had been applied, as from the appearances. Circumstances may occur in which, when a particular course is intended, a stranger's coming in and pursuing another and different course would produce mischief."

On his re-examination, he said: "In the case of such a wound as has been described and I saw, I should not have thought it necessary to resort to the person who had produced it; and I doubt whether, in this case, it would have led to any useful knowledge."

In answer to questions from the judge, he said: "Though I do not think it absolutely necessary, I should have got at the matter if I could. I should think that the spermaceti ointment would not certainly increase the danger of such a wound as that described on the 12th of October. I never saw such an effect produced by an ordinary medical application. There are some constitutions in which very slight remedies will produce dangerous consequences. I have seen one person die of the bite of a leech, and another by the sting of a bee. I had no means of knowing anything of this lady's constitution. I should believe, from the evidence I have heard of the way in which the inflammation made progress, that it proceeded rather from the nature of the application than from the constitution of the party; but it may have depended on both. It is usual to try to ascertain the nature of the constitution. We cannot always do it, but in using potent remedies we use great precaution. I cannot form a positive opinion whether the liniment was rashly used or not, but the impression on my mind is, that it was used without sufficient caution, and, therefore, either rashly or ignorantly. I have seen many instances of inflammation from external application, but I never saw so extensive effect produced as in this instance."

Mr. Frankum then proved that he saw Mrs. Lloyd some time before

her death, and was present at the post-mortem examination. His opinion was that she was very healthy, and there was not, as far as he could judge, any peculiarity of constitution which would account for the violent effects produced.

The defendant, being put upon his defence, said that the prosecution was in reality that of the medical gentlemen, who did not prosecute other medical men, but attacked him because his patients were the incurables of the faculty, and because he cured consumptions, which they were never able to do. He contended that it was not just to hold him responsible where the death occurred while Mrs. Lloyd was under the care of others, and neither he nor his medical friend was able to do anything for her. He also charged Mr. Campbell with unskilfulness in his treatment of the case, and argued that if the mixture had been of the injurious kind suggested, it must have produced mortification at a much earlier period than that in which, according to the evidence, it did. He also offered to prove that he had studied anatomy, and was acquainted with the constitution of the human frame. Of his skill and acceptableness as a practitioner very strong testimony was given, to the same effect as on the former trial.

Bayley, B., in summing up to the jury, said: "It matters not whether a man has received a medical education or not; the thing to look at is, whether, in reference to the remedy he has used, and the conduct he has displayed, he has acted with a due degree of caution, or, on the contrary, has acted with gross and improper rashness and want of caution. I have no hesitation in saying, for your guidance, that, if a man be guilty of gross negligence in attending to his patient after he has applied a remedy, or of gross rashness in the application of it, and death ensues in consequence, he will be liable to a conviction for manslaughter. There is no pretence in the present case for saying that there was any degree of negligence after the application of the liquid, because it seems that the prisoner did not know where Mrs. Lloyd lived; and, when he was sent for, on the 12th, he went, but was almost immediately dismissed, and was not allowed to see her afterwards. If you shall be of opinion that the prisoner made the application with a gross and culpable degree of rashness, and that it was the cause of Mrs. Lloyd's death, then, heavy as the charge against him is, he will be answerable on this indictment for the offence of manslaughter. There was a considerable interval between the application of the liquid and the death of the patient; yet, if you think

that the infliction of the wound on the 10th of October was the cause of the death, then it is no answer to say that a different course of treatment by Mr. Campbell might have prevented it. You will consider these two points: first, of what did Mrs. Lloyd die? You must be satisfied that she died of the wound which was the result of the application made on the 10th of October; and then, secondly, if you are satisfied of this, whether the application was a felonious application. This will depend upon whether you think it was gross and culpable rashness in the prisoner to apply a remedy which might produce such effects, in such a manner that it did actually produce them. If you think so, then he will be answerable to the full extent." The defendant was acquitted.¹

§ 760. In a subsequent case, the prisoner, who for nearly thirty years had carried on the business of an apothecary and man-midwife, with a very considerable practice—having, amongst others, attended the deceased on the birth of all her children—was tried for manslaughter, in having made use of a metal instrument, known as a *vectis* or *lever*, in such a way as to cause death; and it was proved by medical men, first, that the weapon was a dangerous one, and improper to be used at that stage; and, secondly, that it must have been used in a very improper way, and in an entirely wrong direction. Coleridge, J., told the jury that it was for them to say whether the instrument was the cause of death, and whether it had been used by the prisoner with due and proper skill and caution, or with gross neglect or gross want of attention. "No man," he said, "was justified in making use of an instrument, in itself a dangerous one, unless he did so with a proper degree of skill and caution."² In another case, where a child died in consequence of a corrosive plaster placed improperly on its head, Bolland, B., declared the law to be that: "If any person, whether he be a regular or licensed medical man or not, professes to deal with the life or health of his majesty's subjects, he is bound to have competent skill to perform the task that he holds himself out to perform, and he is bound to treat his patient with care, attention, and assiduity."³ And again, where the defendant, who was the agent of Morrison's pills, administered a large quantity of them to the deceased, Lord Lyndhurst, C. B., after reiterating the position

¹ R. v. Long, 4 C. & P. 423.

² R. v. Spilling, 2 M. & Rob. 107; S. P. Ferguson's Case, 1 Lew. 181.

³ R. v. Spiller, 5 C. & P. 333.

that in such cases there was no difference between the licensee and the unlicensed practitioner, said: "In either case, if a party having a competent degree of skill or knowledge makes an accidental mistake in his treatment of a patient, through which mistake death ensues, he is not thereby guilty of manslaughter; but if, when proper medical assistance can be had, a person totally ignorant of the science of medicine takes on himself to administer a violent and dangerous remedy to one laboring under disease, and death ensues in consequence of that dangerous remedy having been administered, then he is guilty of manslaughter."¹

§ 761. Where a person professing himself to be an herbalist administered arsenical ointment to a woman having a tumor, of which she died, but gave her no caution or directions as to the use of it, the judge directed the jury, that if the defendant administered the arsenic without knowing or taking the pains to find out what its effects would be; or if, knowing this, he gave it to the deceased to be used by her without giving her adequate directions as to its use, he would be guilty of culpable negligence, and, therefore, of manslaughter.²

§ 762. It has been ruled, that a mistake on the part of a chemist in putting a poisonous liniment into a medicine bottle, instead of a liniment bottle, in consequence of which the liniment was taken by his customer internally, with fatal results, the mistake being made under circumstances of sudden confusion which threw the prisoner off his guard, does not amount to such criminal negligence as will warrant a conviction for manslaughter.³ But this can only hold good in cases in which the blunder was made through the interposition of circumstances over which the defendant had no control. All persons dealing with poisonous drugs are bound to act cautiously; and to act precipitately and inconsiderately in the use of such drugs, makes the offender responsible for the consequences.

§ 763. On an indictment for manslaughter against a medical man, for administering poison by mistake for some other drug, the prosecution is bound to show that the poison got into the mixture in conse-

¹ R. v. Webb, 1 M. & Rob. 405.

² R. v. Chamberlain, 10 Cox C. C. 486. See also R. v. Markuss, 4 F. & F. 356. *Infra*, § 774, as to druggists.

³ R. v. Noakes, 4 F. & F. 920. See Thomas v. Winchester, 6 N. Y. 397; McDonald v. Snelling, 14 Allen 290, and other cases cited *infra*, §§ 766 *et seq.*

quence of his gross negligence, and it is not sufficient to show merely that the prisoner, who dispensed his own drugs, supplied a mixture which contained a large quantity of poison. The jury must be satisfied that there was such gross and culpable negligence as would show an evil mind. And these facts must affirmatively appear in the prosecution's case.¹

§ 764. The questions before us were elaborately examined by the Supreme Court of Massachusetts in the trial of Samuel Thomson, the founder of a school of medicine for some time known as the "Thomsonian."

The substance of the charge of the court, and of several observations which fell from the court during the trial, is condensed by the reporter as follows:—

"As the testimony of the witnesses was not contradicted, nor their credit impeached, that testimony might be considered as containing the necessary facts, on which the issue must be found. That the deceased lost his life by the unskilful treatment of the prisoner, did not seem to admit of any reasonable doubt: but of this point the jury were to judge. Before the Monday evening preceding the death of Lovett, he had by profuse sweats, and by often repeated doses of the emetic powder, been reduced very low. In this state, on that evening, other doses of this *Indian tobacco* were administered. When the second potion did not operate, probably because the tone of his stomach was destroyed, the repetition of them, that they might operate as a cathartic, was followed by convulsion fits, loss of reason, and death. But whether this treatment, by which the deceased lost his life, is or is not felonious homicide, was the great question before the jury. To constitute the crime of murder, with which the prisoner is charged, the killing must have been with malice, either expressed or implied. There was no evidence to induce a belief that the prisoner, by this treatment, intended to kill, or to injure the deceased; and the ground of express malice must fail. It has been said that implied malice may be inferred from the rash and presumptuous conduct of the prisoner, in administering such violent medicines. Before implied malice can be inferred, the jury must be satisfied that the prisoner, by his treatment of his patient, was wilfully regardless of his social duty, being determined on mischief. But there is no part of the evidence, which proves that the prisoner intended by his prac-

¹ R. v. Spencer, 10 Cox C. C. 525; R. v. Markuss, 4 F. & F. 356.

tice any harm to the deceased. On the contrary, it appears that his intention was to cure him. The jury would consider whether the charge of murder was, on these principles, satisfactorily supported. But, though innocent of the crime of murder, the prisoner may, on this indictment, be convicted of manslaughter, if the evidence be sufficient. And the solicitor-general strongly urged that the prisoner was guilty of manslaughter, because he rashly and presumptuously administered to the deceased a deleterious medicine, which, in his hands, by reason of his gross ignorance, became a deadly poison. The prisoner's ignorance is in this case very apparent. On any other ground consistent with his innocence, it is not easy to conceive, that, on the Monday evening before the death, when the second dose of his very powerful emetic had failed to operate, through the extreme weakness of the deceased, he could expect a repetition of these fatal poisons would prove a cathartic, and relieve the patient; or that he could mistake convulsion fits, symptomatic of approaching death, for an hypochondriac affection. But, on considering this point, the court were all of opinion, notwithstanding this ignorance, that, if the prisoner acted with an honest intention and expectation of curing the deceased by this treatment, although death, unexpected by him, was the consequence, he was not guilty of manslaughter. To constitute manslaughter, the killing must have been the consequence of some unlawful act. Now, there is no law which prohibits any man from prescribing for a sick person with his consent, if he honestly intends to cure him by his prescription. And it is not felony, if, through his ignorance of the quality of the medicine prescribed, or of the nature of the disease, or of both, the patient contrary to his expectation should die. The death of a man, killed by voluntarily following a medical prescription, cannot be adjudged felony in the party prescribing, unless he, however ignorant of medical science in general, had so much knowledge, or probable information of the fatal tendency of the prescription, that it may be reasonably presumed by the jury to be the effect of obstinate wilful rashness at the least, and not of an honest intention and expectation to cure. In the present case there is no evidence that the prisoner, either from his own experience or from the information of others, had any knowledge of the fatal effects of the *Indian tobacco*, when injudiciously administered; but the only testimony produced on this point proved that the patient found a cure from the medicine. The law, thus stated, was conforma-

ble, not only to the general principles which governed in charges of felonious homicide, but also to the opinion of the learned and excellent Lord Chief Justice Hale. He expressly states, that, if a physician, whether licensed or not, gives a person a potion, without any intent of doing him any bodily hurt, but with intent to cure or prevent a disease, and, contrary to the expectation of the physician, it kills him, he is not guilty of murder or manslaughter. If in this case it had appeared in evidence, as was stated by the solicitor-general, that the prisoner had previously, by administering this *Indian tobacco*, experienced its injurious effects, in the death or bodily hurt of his patients, and that he afterwards administered it in the same form to the deceased, and he was killed by it, the court would have left it to the serious consideration of the jury, whether they would presume that the prisoner administered it from an honest intention to cure, or from obstinate rashness and fool-hardy presumption, although he might not have intended any bodily harm to his patient. If the jury should have been of this latter opinion, it would have been reasonable to convict the prisoner of manslaughter at least. For it would not have been lawful for him again to administer a medicine of which he had such fatal experience. It is to be exceedingly lamented, that people are so easily persuaded to put confidence in these itinerant quacks, and to trust their lives to strangers without knowledge or experience. If this astonishing infatuation should continue, and men are found to yield to the imprudent pretensions of ignorant empiricism, there seems to be no adequate remedy by a criminal prosecution, without the interference of the legislature, if the quack, however weak and presumptuous, should prescribe with honest intentions and expectations of relieving his patients." The prisoner was acquitted.¹

§ 765. Whether a medical man who acts honestly but ignorantly in the administering of remedies which produce death is indictable for manslaughter depends upon whether or no his ignorance was negligent. No person is able to prognosticate accurately all the effects of particular drugs he may use, or particular instruments he may use. Perfect knowledge, therefore, cannot be called for, nor is the want of such perfect knowledge imputable as negligence.² And it has been held that an honest but mistaken use of a dangerous remedy, which it is not under the circumstances the duty of the practitioner to under-

¹ Com. v. Thompson, 6 Mass. 134; and see also Fairlee v. People, 11 Ill. 1.

² See Wh. on Neg., § 730; McClelland's Civil Malpractice, 521 *et seq.*

stand, does not, in case of death therefrom resulting, expose him to criminal liability.¹ On the other hand, for a person claiming to be a practitioner to use a powerful medicine without knowing its general characteristics, when he should know them, is a negligence which should make him criminally responsible should death result therefrom.²

It is true that in some instances a less severe view has been taken. Thus it has been held in Missouri³ that "if a person assume to act as a physician, however ignorant of medical science, and prescribe with an honest intention of curing the patient, but through ignorance of the quality of the medicines prescribed, or the nature of the disease, or both, the patient die in consequence of the treatment, contrary to the expectation of the person prescribing, he is not guilty of murder or manslaughter. But if the party prescribing have no such knowledge of the fatal tendency of the prescription, that it may be reasonably presumed that he had administered the medicine from an obstinate, wilful rashness, and not with an honest intention and expectation of effecting a cure, he is guilty of manslaughter, at least, though he might not have intended any bodily harm."⁴

This is no doubt true when the ignorance of the physician in such case is not as to matters which a practitioner of ordinary experience in his circumstances ought to know. If, however, he deals ignorantly with a dangerous medicine, with whose characteristics he ought to be acquainted, then he is responsible for death caused by the medicine. The case is different from that of a layman who deals with a quack medicine. The layman does not profess to know what the medicine is, nor is it his duty to know what it is. It is otherwise with the physician, who claims to be an expert in medicine, and who ought to know the general characteristics of the remedies he applies. If he negligently use a dangerous remedy and death ensue, then he is indictable for manslaughter; and so if he neglect to apply to the case the care usual with good practitioners of his school under similar circumstances.⁵

¹ State *v.* Shultz, 55 Iowa 628.

² See Com. *v.* Thomson, 6 Mass. 134; Holmes *v.* State, 23 Ala. 17.

³ Rice *v.* State, 8 Mo. 561.

⁴ And see State *v.* Shultz, *ut supra*.

⁵ Wh. Cr. L., 8th ed., § 362; R. *v.* Williamson, 3 C. & P. 635; R. *v.* Spiller, 5 C. & P. 533; R. *v.* Senior, 1 Mood. C. C. 346; R. *v.* Whitehead, 3 C. & K.

At the same time, if the death be imputable distinctively to the patient's intervening negligence, introducing a new and independent causal relation, the defendant cannot be convicted on the proof of prior negligence on his part of which the patient's misconduct was not an ordinary sequence.¹

The burden of proving negligence is on the prosecution.²

§ 766. 2d. *Action for torts.*—Where a medical man is sued in a civil court for damages for malpractice, the law as held by the English and American courts may be stated as follows:—

A physician or surgeon is only responsible for ordinary care and skill, such as is usual with careful members of his profession of his particular school practising in similar localities with similar opportunities of experience.³ He is not accountable for a want of the highest degree of skill,⁴ or for an erroneous though honest conclusion according to his best lights.⁵ And in determining whether the practitioner possesses ordinary skill, regard must be had to the opportunities possessed by him at the time.⁶

202; *R. v. Bull*, 2 F. & F. 201; *R. v. Markuss*, 4 F. & F. 356; *R. v. Macleod*, 12 Cox C. C. 534; *State v. Hildreth*, 9 Ired. 440; *Mattheson's case*, 1 Swint. 593. See McClelland's Civil Malpractice 1 *et seq.*, in which book is given a critical analysis from a medical and surgical stand-point, of the reports of civil suits of this class.

¹ *Wh. Cr. Law*, 8th ed., §§ 162-3; *R. v. Holland*, 2 Mood. & R. 351; *McAlister v. State*, 17 Ala. 434; *Parsons v. State*, 21 Ala. 301; see on this topic McClelland's Civil Malp. 36, 64, 510.

² *R. v. Bull*, 2 F. & F. 201; *R. v. Spencer*, 10 Cox C. C. 525; *Brown v. State*, 38 Tex. 482.

³ *Wh. on Neg.*, § 730; *Wilmot v. Howard*, 32 Vt. 447; *Small v. Howard*, 128 Mass. 131; s. c. 35 Am. Rep. 363; *Bellinger v. Craigue*, 31 Barb. 534; *Carpenter v. Blake*, 60 Barb. 480; *Long v. Morrison*, 14 Ind. 595; *Wood v. Clapp*, 4 Sneed. 65; see *Patten v. Wiggin*, 15 Me. 594; *Howard v. Grover*, 28 Me. 97. As to other cases, see *supra*, §§ 351 *et seq.*

⁴ *Leighton v. Sargent*, 7 Fost. 460; *Simonds v. Henry*, 39 Maine 155; *Hancke v. Hooper*, 7 C. & P. 81; *McCandless v. McWha*, 22 Penn. St. 261; *Carpenter v. Blake*, 60 Barbour 488.

⁵ *Heath v. Glison*, 3 Oregon 64.

⁶ *McCandless v. McWha*, 22 Penn. St. 261; see generally, *Wh. on Neg.*, §§ 730 *et seq.* *McCandless v. McWha* is criticised in McClelland's Civil Malpractice 106 *et seq.* It is proper to say that the opinion of Lewis, J., in that case was not adopted by the court, and is a mere individual expression of opinion. The only point actually decided was that a physician must exercise in such case the skill ordinarily exercised under similar circumstances by competent practitioners of his school.

A medical man, professing to be such, is bound, in a case which he professionally undertakes, to apply the knowledge and diligence customary with good specialists under similar circumstances. What is due diligence, however, in a city, where the practitioner has peculiar opportunities of instruction and facilities to obtain instruments and medicines, is not due diligence in the country, and what is due diligence in the country might not be due diligence in the city. "Hence the question of negligence in each particular case is to be determined, not by inquiring what would be the average diligence of the profession, but what would be the diligence of an honest, intelligent and responsible expert in the position in which the defendant was placed. *Culpa levissima*, to adopt one of the terms of the schoolmen, is not in such cases a sufficient basis to sustain a suit. There is scarcely a case in which a physician is called in which he may not be charged with *culpa levissima*; and if *culpa levissima* makes him liable, then his liability becomes almost co-extensive with his practice. According to the well-known maxim, *imperitia* is to be imputed as *negligentia*; but who, in a science so vast, so complicated in its connections, so manifold in its schools, can divest himself of the charge of *imperitia levissima*? * * * So, also, with regard to the mechanism of his profession. Is there not some instrument, if the case be one in which instruments are required, which might aid his patients, but which he has not procured? * * * And then, once more, with regard to his personal attendance. It is possible for a physician never to leave a particular patient; and, in such case, if he leave the patient, and mischief thereby ensue, he is guilty of *culpa levissima*. * * * In other words, he must be guilty of *culpa levissima* to each of his patients, if he is a physician in general practice; yet, unless he be a physician claiming to practice, he cannot be chargeable even with *culpa levis*. The only relief from this absurdity is by rejecting the doctrine of *culpa levissima*, and holding the physician specially liable, as is the mandatary and agent, only for *culpa levis*; *i. e.* the lack of that diligence which would be exhibited by good physicians of the school and specialty with which he connects himself, when practising in a case similar to that under investigation. He must familiarize himself with the literature of his profession, but this must be according to the opportunities of his place. He must be attentive to his patient, in proportion to the exigencies of the case; he cannot leave the patient at a critical juncture without giving him opportunity to

obtain other competent attendance ; and he must give the patient continued attention so long as this is requisite ; but he is not required to give to any one patient an undue proportion of his services.¹ When his skill is at issue, he may introduce evidence to prove the existence of such general skill irrespective of the particular case.² "That a physician or surgeon possesses skill, may be shown by those of the same profession, who can speak from personal knowledge of his practice."³

§ 767. *Gratuitousness* has been sometimes set up as a test, and it has been said that a higher degree of diligence and care is required when medical services are to be paid than is the case when they are understood to be gratuitous.⁴ This is no doubt correct were the services rendered by a person acting as a mere friend, and not professing to give distinctively professional attendance ; but when a professional man undertakes as such to take charge of a case he is bound, irrespective of the question of remuneration, to the diligence and skill specialists of his school are accustomed to show under similar circumstances. The pauper patient, occupying a free bed in a hospital, may not be able to pay for as many comforts as the patient who has a large income ; but the physician who is in attendance cannot discriminate between them, so far as the application of his skill is concerned ; he cannot neglect either ; and he is as liable for such neglect to the patient who does not pay as he is to the patient who does pay.⁵

§ 768. A volunteer practitioner, not a recognised physician of any

¹ Wh. on Neg., §§ 734 *et seq.*; and see, in addition to cases cited above, Rich *v.* Pierpoint, 3 F. & F. 35; Ruddock *v.* Lowe, 4 F. & F. 519; Lamphier *v.* Phipos, 8 C. & P. 479; Simonds *v.* Henry, 39 Me. 135; Patten *v.* Wiggin, 51 Me. 594; Barbour *v.* Martin, 62 Me. 536; Ballou *v.* Prescott, 64 Me. 305; Hathorn *v.* Richmond, 48 Vt. 557; Leighton *v.* Sargeant, 7 Fost. 460; Landon *v.* Humphrey, 9 Conn. 209; Craig *v.* Chambers, 17 Ohio St. 253; Geiselman *v.* Scott, 25 Ohio St. 26; McNeivins *v.* Lowe, 40 Ill. 210; Almond *v.* Nugent, 34 Iowa 300; Tefft *v.* Wilcox, 6 Kans. 46. As to grades of negligence, see McClelland's Civil Malpractice 513.

² Mertz *v.* Detweiler, 8 W. & S. 376; Seare *v.* Prentice, 8 East 348; Carpenter *v.* Blake, 60 Barb. 488.

³ Mullin, P. J., in Carpenter *v.* Blake, 60 Barb. 518.

⁴ Ritchey *v.* West, 23 Ill. 385; overruled in this respect, however, by McNeivins *v.* Lowe, 40 Ill. 210.

⁵ See Wh. on Neg., §§ 483, 500, 731. A view conflicting with that in the text is taken in McClelland's Civil Malpractice 521.

established school, is liable for any damage his officious interference may produce.¹ And this rule is still more strictly applied when the volunteer excludes a competent practitioner, otherwise attainable.² Though if he acts in good faith, the parties employing him knowing his want of regular standing, he is only liable for injuries caused by his want of the qualifications he claimed to possess, and for the want of the care used with persons of his class, under similar circumstances.³

¹ *Hood v. Grimes*, 13 B. Monr. 188.

² See *Ruddock v. Lowe*, 4 F. & F. 519; *R. v. Simpson*, 4 C. & P. 407, *note*.

³ In *Higgins v. McCabe*, 126 Mass. 13, a midwife volunteered to cure a disease of the eyes in the infant at whose birth she had assisted, and whom she was nursing, informing the parents it was not necessary to call in a physician, as she had successfully treated like cases. The child became blind, and there was medical evidence that if other remedies had been applied that a cure would probably have been effected. The midwife was not a physician and did not know of these remedies. It was held that there was no evidence of such negligence as imposed liability on the defendant.

Colt, J., in delivering the opinion of the court, said: "It appears that the defendant was originally employed only as a midwife. The parents had employed her twice before in that capacity. There was no competent evidence that the treatment of diseases of the eye which might be developed in the child was embraced in the duties which the defendant undertook as midwife; and there was no evidence that the defendant was unskilful or negligent in the performance of any of the duties with which she was properly chargeable in that capacity. But it is insisted that independently of the employment as midwife the jury upon this evidence might properly find that the defendant, in professing to have superior skill and experience, held herself out as competent to cure this particular disease, and, therefore, was permitted by the mother to assume the treatment of it. The evidence on which it is sought to charge the defendant with this additional duty is found in the testimony of the mother, and that testimony must be construed with reference to the character and relations of the parties, and the admitted facts in the case. The services of the defendant in respect to the cure of this disease were wholly gratuitous, and were performed as acts of benevolence only. The defendant was a midwife. The jury would not be justified in finding that she claimed to possess, or might reasonably be expected from her calling to have, the peculiar knowledge, skill and experience of an expert in such matters. The representations of the defendant that she could cure the child with simple remedies and washes, that she had cured other children in the same way, who were similarly afflicted, and that there was no need of a doctor, were but the expressions of an opinion as to the efficiency of her remedies, and did not imply that she undertook to use that higher skill of the medical profession which is required in the treatment of the more complicated and delicate organs. The question was, whether she had discharged the duty which she assumed with the skill which she professed to have, and with that diligence which might reasonably have been expected of her.

§ 769. Where the law prescribes no absolute system, a physician is expected to practise according to the system he professes and avows.¹ It was accordingly held admissible for a defendant, in an action for malpractice, to prove that his treatment of the case was according to the *botanic* system of practice, which he professed, and was known to follow.² And so as to homœopathic treatment.³

§ 770. A patient who refuses to co-operate with his medical attendant, and who thereby sustains injury, cannot recover compensation for the injury from the medical attendant, even though the treatment proposed was open to objection, provided that the injury is not primarily imputable to the medical attendant's malpractice.⁴

It has been held in Pennsylvania⁵ that contributory negligence on the part of the patient defeats his right of action. "If the contributory negligence of the defendant in error," such is the opinion of the court, "united in producing the injuries complained of he was not so liable. This rule applies to the unnecessary pain and protracted illness as well as the permanent deformity of the limb. The evidence is amply sufficient to submit to the jury the question of contributory

Upon that question the fact that the service was rendered without compensation must have an important, if not decisive, bearing. The duty imposed upon a gratuitous agent is less stringent than when the service undertaken is founded upon a consideration paid. Under the rule requiring ordinary care as applied to the case we see no evidence of neglect in any degree. A person who, without special qualifications, volunteers to attend the sick, can, at most, be only required to exercise the skill and diligence usually bestowed by persons of like qualifications, under like circumstances. *Gill v. Middleton*, 105 Mass. 479; *Leighton v. Sargent*, 31 N. H. 119; *Simonds v. Henry*, 39 Me. 155; *Lamphire v. Phipos*, 8 C. & P. 475; *Hancke v. Hooper*, 7 Id. 81. There was evidence from regular physicians that if other and more powerful remedies had been seasonably applied they would probably have effected a cure; but these were remedies known to the medical profession of which the defendant neither had nor professed to have knowledge. *Ruddock v. Lowe*, 4 F. & F. 519; *Jones v. Fay*, Id. 525."

¹ *Carpenter v. Blake*, 60 Barb. 488; *Musser v. Chase*, 29 Ohio St. 577; *Sutton Facey*, 1 Mich. 243.

² *Bournan v. Woods*, 1 Greene (Iowa) 441.

³ *Corsi v. Maretzke*, 4 E. D. Smith 1. As to what, according to the dominant school of medicine, constitutes quackery, see McClelland's Civil Malp. 1 *et seq.*

⁴ *Leighton v. Sargent*, 7 Fost. 460; *Carpenter v. Blake*, 60 Barb. 488; *McCandless v. McWha*, 22 Penn. St. 261; s. c. 25 Penn. Stat. 95; *Geischman v. Scott*, 25 Ohio St. 86; *Almond v. Nugent*, 34 Iowa 300; *Scudder v. Crossan*, 43 Ind. 343.

⁵ *Potter v. Warner*, 91 Penn. St. 362.

negligence on the part of the defendant in error. If they find the parents of the boy were in charge of and nursed him during his sickness, and that they did not obey the directions of the plaintiff in error in regard to the treatment and care of their son during such time, but disregarded the same and thereby contributed to the several injuries of which he complains, he cannot recover therefor. If the injuries were the result of mutual and concurring negligence of the parties, no action to recover damages therefor will lie. A person cannot recover from another for consequences attributable in part to his own wrong." But this is too broadly asserted. There is no case of injury sustained in which the party injured might not, by extreme caution, have avoided the injury. The question is whether the injury was imputable to the negligence of the medical attendant, or imputable to the negligence of the patient. If the medical attendant was negligent, and from this negligence the injury proceeded, then the patient's negligence is no defence when such negligence is what might have been expected in the circumstances in which the patient was placed. On the one side, the medical attendant is not to be held liable for injuries which are the consequence of independent negligence on the part of the patient. On the other side, when the patient's negligence flows from the misconduct of the medical attendant, then the medical attendant is liable for the injury. He cannot set up as a defence the negligence that his own misconduct induced.¹

¹ See *Hibbard v. Thompson*, 109 Mass. 286, where the court said:—

"They (the jury) were first instructed that 'if it be impossible to separate the injury occasioned by the neglect of the plaintiff from that occasioned by the neglect of the defendant the plaintiff cannot recover;' but the judge added: 'If, however, they can be separated for such injury as the plaintiff may show thus proceeded solely from the want of ordinary skill or ordinary care of the defendant he may recover.' The first part states the ordinary rule as to the negligence of the plaintiff; the second states the proper limitation of the rule. It is an important limitation, for a physician may be called to prescribe for cases which originated in the carelessness of the patient, and though such carelessness would remotely contribute to the injury sued for, it would not relieve the physician from liability for his distinct negligence and the separate injury occasioned thereby. The patient may also, while he is under treatment, injure himself by his own carelessness; yet he may recover of the physician if he carelessly or unskillfully treats him afterward, and thus does him a distinct injury. In such cases the plaintiff's fault does not directly contribute to produce the injury sued for."

That the negligence on the patient's part, in order to defeat the action, must

§ 771. The defendant is not liable unless damage has ensued. The implied liability of a surgeon, retained to treat a case professionally, extends no further, in the absence of a special agreement, than that he will indemnify his patient against any injurious *consequence* resulting from his want of the proper degree of skill, care or diligence in the execution of his employment.¹

It has also been properly held that careless nursing will not by itself, though it may have aggravated the patient's sufferings, preclude his recovery, unless it were the immediate cause of the injury complained of. A negligent physician ought to expect negligent nursing as one of the incidents of his own misconduct; and if the injury is primarily imputable to his wrong, he cannot set up the subsidiary negligence of attendants as a defence.² *A fortiori* the plaintiff will not be precluded from recovery by the fact that his malady was originally due to his negligence.³ If there could only be a recovery in cases of sickness which the plaintiff's carelessness induced, there are few cases in which physicians could be held responsible, since there are few cases of sickness with which the patient's carelessness had nothing to do. If the injury is imputable, not to the mismanagement of the physician, but to some idiosyncrasies of the patient against which the physician could not be expected to guard, then the physician is not liable.⁴ It is not necessary, however, that the injury should be physical, capable of appreciation as such.

be directly the cause of the injury, appears from *Chamberlain v. Morgan*, 68 Penn. St. 168, where it was held that if the physician has injured the patient by his negligence, the refusal of the patient to allow an experiment by another physician to repair the injury is not contributory negligence unless there was reasonable assurance of the success of the experiment. It may have been negligent in the patient to repel this additional test, but this will not preclude his recovery if his negligence was induced by the defendant's negligence. See a learned note in 36 Am. Rep. 668.

That an insane patient is not chargeable with contributory negligence, see *People v. N. Y. Hospital*, 3 Abb. N. C. 229.

¹ *Craig v. Chambers*, 17 Ohio St. 253.

² *Wilmot v. Howard*, 32 Vt. 447.

³ Wh. on Neg., § 737.

⁴ In *Byles v. Hazlett*, Sup. Ct. Penn., 1882, 11 W. N. C. 212; Pitts. Leg. Jour., March 15, 1882, which was a case of alleged malpractice in the setting of a broken leg, Green, J., in giving the opinion of the Supreme Court, said: "The results of the treatment complained of by the plaintiff were the undue shortening of his leg and its excessive eversion. But the testimony of both the

In an interesting case in Michigan, in 1881,¹ it was ruled that where a physician took with him without necessity, to a case of confinement, a young unmarried man, not a physician or student of medicine, and the fact that the attendant was not a medical man was not known to the patient or her husband, both the physician and the attendant were liable in damages. "Dr. De May," said Marston, C. J., "therefore took an unprofessional young unmarried man with him, introduced and permitted him to remain in the house of the plaintiff, when it was apparent that he could hear at least, if not see, all that was said and done, and as the jury must have found, under the instructions given, without either the plaintiff or her husband having any knowledge or reason to believe the true character of such third party. It would be shocking to our sense of right, justice, and propriety to doubt even but that for such an act the law would afford an ample remedy. To the plaintiff the occasion was a most sacred

plaintiff's and the defendant's witnesses was so conclusive that there was no undue shortening, that the court withdrew that part of the case from the consideration of the jury entirely. Having read the whole of the testimony bearing upon this part of the case with care, we are convinced that the learned judge was entirely right in so doing. This left the eversion as the only remaining ground upon which the plaintiff could in any event recover. It thus became necessary that this branch of the case should be considered both by the court and the jury with entire impartiality, and with much care and circumspection. The defendant's theory was that the eversion was occasioned by or was the result of, some disease of the hip, which produced an atrophied condition of the muscles leading from the hip, and that this was the direct cause of the eversion complained of. This theory was supported by the direct testimony of several surgeons, and does not appear to have been contradicted by the testimony of the plaintiff's surgeons. If this was the true cause of the eversion of the plaintiff's leg, the defendant was not necessarily responsible for it under any aspect of the testimony, and may not have been responsible at all in any view of the case. After a most careful examination of the charge of the learned judge of the court below, we fail to discover that any allusion was made to this testimony, or that the subject was in any manner presented to the consideration of the jury. They were told they could allow nothing for the shortening of the leg, because there was no evidence of bad surgery as to that, and then they were instructed as to the measure of damages in the event of a recovery. The question whether the eversion was the result of a diseased condition of the hip, or muscles leading from it, or of defective treatment of the fracture by the defendant, was entirely omitted in the charge. We think it should have been distinctly presented, with appropriate reference to the respective contentions of the parties and to the testimony bearing upon either side."

¹ *De May v. Roberts*, 46 Mich. 160.

one, and no one had a right to intrude unless invited or because of some real and pressing necessity which it is not pretended existed in this case. The plaintiff had a legal right to the privacy of her apartment at such a time, and the law secures to her this right by requiring others to observe it, and to abstain from its violation. The fact that at the time she consented to the presence of Scattergood, supposing him to be a physician, does not preclude her from maintaining an action and recovering substantial damages upon afterwards ascertaining his true character. In obtaining admission at such a time and under such circumstances, without fully disclosing his true character, both parties were guilty of deceit, and the wrong thus done entitles the injured party to recover the damages afterwards sustained, from shame and mortification upon discovering the true character of the defendants. Where a wrong has been done another, the law gives a remedy, and although the full extent and character of the injury done may not be ascertained or known until long after, yet in an action brought damages therefor may be fully awarded. This is true both in cases of tort and crime as well as in actions for breach of contract. The charge of the court upon the duty and liability of the defendants and the rights of the plaintiff was full and clear, and meets with our full approval."

§ 772. The question whether the defendant exercised adequate skill and care is for the jury. Thus, in an action against a physician and surgeon, to recover damages for negligence and malpractice in the setting and treatment of a dislocated limb, it was held by the Supreme Court of New York, that it is for the jury to say whether, upon the evidence, it is established to their satisfaction that the defendant did not use the means which experience has shown to be proper and necessary in order to justify a surgeon in assuming that he has restored the bones to their places.¹

§ 773. *Dentists* are subject to the same conditions of liability as are other practitioners,² and the patient cannot recover for a mistake into which he himself led the dentist.³ That the service was gratui-

¹ Carpenter *v.* Blake, 60 Barbour 488. See Olmstead *v.* Gere, cited *infra* § 898.

² Simonds *v.* Henry, 39 Me. 153.

³ See article in 26 Alb. L. J. 67, citing Eakin *v.* Brown, 1 E. D. Smith 36; Clark *v.* Kerwin, 4 E. D. Smith 21; Parker *v.* Adams, 12 Metc. 417.

tous is no defence to a suit for negligence,¹ and the patient can set off harm done by the dentist's negligence in a suit for compensation for services.² That a dentist is indictable for rape when he effects carnal intercourse with a patient under influence of chloroform, has been already seen.³

§ 774. A *druggist* is liable for damages caused by his negligence on the same principle as is a party who negligently uses a dangerous agency to the detriment of another. A druggist must show the care customary among careful specialists in his department, such care being proportioned to the danger of the drug dispensed; and if from his lack of such care injury ensues, he must pay for such injury.⁴

¹ *Street v. Blackburn*, 1 H. Bl. 159; *Wilson v. Brett*, 11 M. & W. 113. See, however, McClelland's Civil Malpractice 520.

² *Peake's N. P. C.* 83; *Piper v. Menifee*, 12 B. Mon. 465. As to undue administration of chloroform, see *Bogle v. Winslow*, 5 Phila. 136.

³ See *supra*, §§ 245, 266.

⁴ *George v. Skivington*, L. R., 65 Exch. 1; *McDonald v. Snelling*, 14 Allen 290; *Thomas v. Winchester*, 6 N. Y. 399; *Fleet v. Hollenkemp*, 13 B. Mon. 219.

In *Brown v. Marshall*, 47 Mich. 576, Cooley, J., said: "A tort arises when there is a thing amiss with resulting damage. If the drug was negligently sold, as is charged in this case, and was subsequently taken by the plaintiff without fault on her part or on the part of any one whose act in administering it is to be imputed to her, these facts constitute that necessary concurrence of wrong and damage which will support an action. It is not necessary to inquire into the subsequent treatment of the case in order to determine the question of legal wrong. A heedless attendant cannot release the defendant from his responsibility by neglecting his own duty, nor can the physician do so by treating the case improperly. But the question of the extent of the injury which is traceable to the defendant's negligence is another matter altogether. To judge of that it is necessary to inquire into the care and treatment which the plaintiff subsequently received. If it shall appear that the injury to the plaintiff's health is traceable not to the drug itself, but to improper treatment or want of due care after it was taken, it will then be obvious that the plaintiff's injury at the hand of the defendant is merely nominal. The question will then become one of damages only, and must be disposed of by the jury. * * * * * The question then is whether the delivery at a drug store of a deleterious drug to one who calls for one that is harmless, and a damage resulting therefrom, will not merely tend to make out a right of action, but of themselves give a right of action, even though there may have been no intentional wrong and the jury may believe there was no negligence. That such an error might occur without fault on the part of the druggist or his clerks is readily supposable. He may have bought his drugs from a reputable dealer, in whose warehouses

they may have been tampered with for the purposes of mischief. It is easy to suggest accidents after they come to his own possession, or wrongs by others of which he would be ignorant, and against which a high degree of care would not give perfect protection. But how the misfortune occurs is unimportant if, under all circumstances the fact of occurrence is attributable to him as legal fault. The case, it must be conceded, is one in which a very high degree of care may justly be required. People trust not merely their health but their lives to the knowledge, care, and prudence of druggists, and in many cases a slight want of care is liable to prove fatal to some one. It is therefore proper and reasonable that the care required shall be proportioned to the danger involved. But we do not find that the authorities have gone so far as to dispense with actual negligence as a necessary element in the liability when a mistake has occurred." See *supra*, §§ 761, 762.

In some states it is made unlawful to sell poisons unless the word "poison" is put on the bottle or box containing the drug. An interesting question bearing on this statute arose lately in New York. The plaintiff's intestate, who was suffering from a diarrhoea, went, at the advice of a friend, to a drug store to procure ten cents worth of "black draught," a comparatively harmless drug, of which he intended to take, as a dose, a small glassful. The druggist's clerk testified that he came to the store and asked the proprietor, the defendant, for ten cents worth of "black drops;" that the defendant told him that that was a poison, that the dose was from ten to twelve drops, and advised him to take another mixture; he refused, and the clerk, by the defendant's direction, gave him two drachms of "black drops" in a bottle, with a label having those two words written upon it, but nothing to indicate the dose or that it was poison. The intestate took the bottle home, drank almost all of its contents, and died the next morning from the effects of so doing. In this action, brought by the plaintiff to recover damages for negligent killing by the defendant, held, that the court should have submitted to the jury the question as to whether the defendant was not guilty of negligence in failing to place upon the bottle a label showing that its contents were poisonous; and that it erred in nonsuiting the plaintiff. The Supreme Court said, by Dykman, J.: "It is a crime to sell any poisonous substance without the word 'poison' written or printed on a label attached to the parcel. * * * The defendant made sale to the plaintiff's intestate of an article of the double strength of laudanum, for immediate consumption as a medicine, without placing on it any label marked poison, and the result was a natural one. True, he told him it was poison, and gave him caution respecting the quantity to be taken, but he placed no label on the parcel marked poison. It is plain that prudence required much more of the defendant than he gave, and it is equally plain that his action fell far short of the requirements of the law. The cause should have been submitted to the jury, with proper instructions respecting the caution and care required of the defendant to determine whether he was guilty of negligence in the transaction, and whether the intestate of the plaintiff was free from fault on his part."

This was affirmed in the court of appeals, where it was held that a druggist who fairly warns a customer of the dangerous quality of a drug sold, and gives

proper directions for its use, is not liable for the consequences of an overdose by the customer, although the druggist omitted to put the label "poison" on the parcel, as required by statute. It was, however, held that if the warning as to the poisonous nature of the drug was not given, its omission was negligence, for which the vendor was liable. *Wohlfahrt v. Beckel*, 92 N. Y. 491, affirming s. c. 27 Hun 74. The opinion of the court of appeals was given by Finch, J., who said:—

"The evidence showed that the black drop in both forms of preparations was 'deadly,' and that it was usually denominated poisonous is to be inferred both from its well-known character, and from the evidence given by the pharmacist, who said that unless selling upon the prescription of a physician he would mark upon the medicine the dose, or label it poison, or both. Indeed, the learned counsel of the defendant concedes all this, for he says 'if any third party, acquainted with the real contents of the phial had been injured, then an action would lie against the defendant,' and the defence interposed rests wholly upon the fact asserted that full warning of the poisonous nature of the liquid was given, and the quantity which might be safely taken was stated to the purchaser. So that the question here whether the nonsuit ordered by the trial judge can be sustained or not turns solely upon the inquiry whether the warning was in fact given, and that again upon the question whether the jury would have been at liberty to disbelieve the evidence of the defendant's clerk."

In *Gwynn v. Duffield*, Sup. Ct. Iowa, 1883, the plaintiff's case was that he went into the defendant's drug store and helped himself from a jar to belladonna, believing it to be extract of dandelion, and was injured. He had just given an order for dandelion, and it had been served from the jar by the apothecary. He called the attention of the apothecary to his act, and inquired as to a proper dose of dandelion. It was held by the Supreme Court that the jury should have been instructed without qualification that if plaintiff was guilty of contributory negligence he could not recover damages.

"The jar," said the court, "was properly labelled, and the plaintiff's negligence, if any, consisted in not discovering that the jar contained belladonna. There is no pretence that he could not read. The only excuse for him was, so far as we can discover, that the defendant, whom he consulted in regard to the size of the dose, had just made the same mistake. He had just taken from that jar, as the plaintiff had seen, a portion of its contents to fill an order for the extract of dandelion, given by the plaintiff, and was doing up the package when the plaintiff proceeded to help himself to a dose from the jar as above set forth. There is not the slightest evidence that the defendant discovered the plaintiff's danger. The jury, then, should have been instructed without qualification that if the plaintiff was guilty of negligence contributing to the injury he cannot recover."

CHAPTER VI.

HOMICIDE, FETICIDE AND INFANTICIDE.

A. CORPUS DELICTI,

I. THAT A DEATH TOOK PLACE, § 776.

Universal rule of civil and common law, that the fact of death should be proved, § 776.

Cases of conviction of innocent parties, from neglect of this precaution, §§ 776-780.

Exceptions to the rule, § 781.

1st. Possession of body is unnecessary when decease is proved by eye-witnesses, § 781.

2d. And so where it is proved that the body was destroyed by chemical or mechanical agents, § 782.

II. THAT THE DEATH WAS FROM VIOLENCE.

1st. Poisoning.

(a) Measures to be taken by the prosecution when poisoning is suspected, § 784.

(b) Chemical proof of poison in stomach not essential, § 792.

Importance of chemical examination of stomach and its contents, § 793.

When, however, this is prevented by the accused, he cannot set up the want of it, § 793.

On the other hand, neglect by the prosecution to procure it, if in its power, is a powerful presumption in favor of the accused, § 793.

(c) Facts on which a verdict of guilty can be supported, § 795.

Symptoms of sickness, § 797.

Appearance at death, § 798.

(d) Duties of counsel for prosecution and defence, § 800.

2d. Wounds and blows, § 802.

a. Legal definition of wounds, § 802.

b. Under what circumstances wounds imply criminal agency, § 805.

a¹. Character of the wounds themselves, § 805.

a². Adaptation to a particular instrument, § 805

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 - b³. Punctured, § 810.
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 - d³. Contused, § 812.
 - d². Number, § 813.
 - Injuries by violence, § 814.
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- c¹. Inferences from surrounding objects, § 817.
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B. INTENT AND DESIGN, FROM WHAT TO BE INFERRED, § 827.

I. PRIOR ATTEMPTS, PREPARATIONS, AND THREATS, § 827.
Evidence of such admissible, §§ 827–8.

II. MARKS OF VIOLENCE, AND QUESTION OF SUICIDE OR HOMICIDE, § 832.
Presumptions to be drawn from marks of violence, § 833.
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III. INSTRUMENT OF DEATH, § 835.
The use of a lethal instrument leads to the presumption that death was intended, § 835.
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IV. LIABILITY OF DECEASED TO ATTACK, § 839.
1st. Possession of money, § 839.
Avarice and ambition, § 840.
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3d. Jealousy, § 844.

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VI. MATERIALS APPROPRIATE TO BE CONVERTED INTO INSTRUMENTS OF CRIME, § 847.
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et seq., etc.

VIII. POSSESSION OF FRUITS OF OFFENCE, § 858.

Illustration of the general value of indicatory evidence, § 859.

C. INFANTICIDE AND FœTICIDE, § 860. (See, for the medical view of this subject, §§ 84-107, 108-178.)

I. HOW FAR FœTICIDE IS AFFECTED BY THE DEGREE TO WHICH GESTATION HAS PROCEEDED, § 860.

At common law destruction of an unborn infant is a misdemeanor. Late differences of opinion as to whether there must be a quickening. Better opinion is, that all attempts of this character are misdemeanors, no matter what be the stage of gestation, § 861.

II. HOW FAR THE OFFENCE IS AFFECTED BY THE FACT OF BIRTH, § 867.

When a child dies *after* birth, from a wound inflicted before, the offence is murder; when the death takes place *before* birth it is at common law but a misdemeanor, §§ 867-8.

III. TESTS OF VIABILITY RECOGNISED BY THE COURTS, § 869.

Viability medically considered, §§ 41-61-7, 128.

Difference of opinion as to actual degree of birth which is requisite to constitute the legal offence, § 870.

General propositions of law bearing on this topic:—

- (1) Where there is a malicious wound inflicted on an infant, with intent to produce death, and death ensues *after birth*, the offence is murder, § 870.
- (2) Where there is a malicious exposure of an infant, with intent to produce death, and death ensues after birth, it is murder, § 870.
- (3) Where there is a wanton exposure of an infant, without the intent to produce death, but with the expectation of shifting the support of the infant upon some third person, and death ensues after birth, it is manslaughter, § 870.
- (4) Where there is an exposure resulting from necessity, ignorance, or insanity, and death ensues after birth, the offence is excusable homicide, in which in accordance with American practice, the defendant is entitled to an acquittal, §§ 870 *et seq.*

V. CORPUS DELICTI IN INFANTICIDE, § 875.

Difficulties arising in this respect from—

- (1) The uncertainty of the fact of pregnancy, § 875. See §§ 18, 779.
- (2) The uncertainty of the time of death, § 875.
- (3) Uncertainty of presumptions, § 876.
- (4) Casualties of gestation and delivery, § 877. (See this subject medically considered, §§ 37-128.)

A. CORPUS DELICTI.

I. THAT A DEATH TOOK PLACE.

§ 776. "I would never," said Lord Hale, "convict any person of murder or manslaughter unless the fact were proved to be done, or at least the body found dead."¹ The civilians are no less emphatic. "Diligenter cavendum est judici, ne supplicium præcipitet, antequam de crimine consteterit."² "De corpore interfecti necesse est ut constet."³ Numerous cases attest the necessity of this check.⁴ Thus we are told of a Frenchman who was convicted on his own confession of the murder of a widow, who two years afterwards returned to her home, and had never received any injury whatever. And as Bunyan tells us, "Since you are entered upon stories, I also will tell you one, the whieh, though I heard it not with my own ears, yet my author I dare believe. It is concerning one old Tod that was hanged about twenty years ago, or more, at Hartford for being a thief. The story is this: At a summer Assize, holden at Hartford, while the judge was sitting upon the bench, comes this old Tod into the court, clothed in a green suit, with his leathern girdle in his hand, his bosom open, and all in a dung sweat, as if he had run for his life; and being come in he spake aloud as follows: 'My Lord, said he, here is the veryest rogue that breathes upon the face of the earth; I have been a thief from a child; when I was but a little one, I gave myself to rob orchards, and to do other such like wicked things, and I have continued a thief ever since. My Lord, there has not been a robbery committed this many years, within so many miles of this place, but I have either been at it or privy to it.' The judge thought the fellow was mad; but, after some conference with some of the justices, they agreed to indict him, and so they did, of several felonious actions; to all of which he heartily confessed guilty, and so was hanged with his wife at the same time." And yet in this case, the guilt, if not imaginary in fact, was so in law, so far as concerned all the purposes of the trial.⁵

§ 777. A case occurred at Ratisbon, in 1849,⁶ of which the follow-

¹ 2 Hale P. C. 290; and see *Tyner v. State*, 5 Humph. 383.

² Matth. de Crim. in Dig., lib. 48, tit. 16, ch. 1.

³ Matth. Probat., ch. 1, n. 4, p. 9.

⁴ See vol. i., § 200 b, §§ 782-799.

⁵ See for other cases, Wh. Cr. Ev., §§ 632 *et seq.*

⁶ Henke's Zeitschrift, E. H. 41.

ing is a brief abstract: A girl twenty years of age was arrested on the supposition that she had committed infanticide. Being brought before the examining magistrate, a few days after the alleged commission of the crime, she made the following statement: "I was a domestic in the house of the brewer L., but was dismissed from his service on account of being far gone in pregnancy, and near my confinement. After returning to my home in the country, I came back to the town to get my clothes. But on the way, as I came near the bridge, I felt severe pains, and soon became sure that labor had commenced. My situation was distressing; I was entirely alone and helpless. Meanwhile it became dark, the pains became more and more severe, and about midnight I was delivered of a boy. The child was living when it came into the world, for it cried, and when I put my finger in its mouth it sucked; in truth, at first, I had great joy over the child; soon, however, I could not bear to look at it; the fear of shame and exposure, and the thought that perhaps I would never be able again to obtain a situation, got the better of me; I ran without further hesitation to the bridge, with the child in my arms, and threw it over into the deepest part of the river, where it soon disappeared." She afterwards gave still more minute details, relative to her pregnancy and the birth of the child, all of which were perfectly consistent and natural. Upon the physical examination (which is directed by the Bavarian penal code), it was discovered that she had not been pregnant. She was taken to the hospital and leeches freely applied to her head, under which treatment she soon recovered her reason and her usual bodily health. Very probably the delusion might have become a fixed one, had this rational treatment not been adopted at the proper time.¹

¹ See ante, §§ 18, 287 *et seq.* I am indebted to Mr. William B. Reed for the following note: In the case of Margaret Shreves, tried for infanticide in the Oyer and Terminer of Philadelphia, in October, 1855, there was a striking illustration of the rule as to the *corpus delicti*, and of the necessity of accurate observation on the part of the coroner on the inspection of doubtful remains. The daughter of the prisoner was delivered of a female illegitimate child on 7th June, at 10 A. M. The infant was handed to the grandmother (the prisoner) on its birth. It was neither washed nor dressed. At 6 P. M., the prisoner was seen in the street at some distance from her home with the infant, still undressed, wrapped in a shawl. It was raining heavily. The child was blue, and moaned, making a noise as if in a spasm. The prisoner said laudanum had been given, which was proved to be false. At a late hour the prisoner was again seen with

§ 780. An equally singular case in this country is that of two brothers, named Boorn, who, on being charged with the murder of another, were convicted and sentenced to death, chiefly on their admissions, but were fortunately relieved from execution by the reappearance of their alleged victim. To the same effect is a case in Illinois, in 1841, where three brothers, named Trailor, were arrested on the charge of murdering a man named Fisher, who when last seen, had been in their company. Strong circumstantial evidence was produced, showing the traces of a death struggle, where the homicide was alleged to have been committed; and the case was fortified by expressions alleged to have been subsequently used by one of the brothers as to his having become legatee of the deceased's property. The examination had scarcely finished before one of the three defendants made a confession, detailing circumstantially the whole transaction, showing the previous combination, and ending with a direct statement, under oath, of the homicide. To the amazement of the whole country, however, the deceased made his appearance in just time enough to intercept a conviction; the only way of accounting for the confession which had been produced was, that the party who made it, in the desperation of impending conviction, took this method of cutting short suspense.¹

the child alive but moaning. She tried to leave it at the Foster Home, but was refused. The child was never again seen alive. Two weeks afterwards, the conduct of the prisoner being in the meantime very mysterious, and she being detected in many falsehoods, on the 14th, the body of a female new-born infant was found in the prisoner's privy, very much decomposed. The identity of the remains was in question. The attending physician testified that he had at the delivery tied the cord with common sewing thread. The string around the cord of the infant found in the privy *was said* to resemble thick twine rather than thread, but there was difference of opinion about it. It may have swelled and altered by the action of liquid. The production of the string would have determined this, *but this the coroner failed to preserve*. The court (Thompson P. J.,) held it necessary to establish—1. The identity of the remains beyond doubt. 2. That the infant had not died accidentally, possibly by neglect, and was not merely concealed in the privy. The jury properly acquitted the prisoner. Here no element of proof as to the *corpus delicti* was clear. See *ante*, §§ 289-297. As to Morgan's Case, see Wh. Cr. Ev., § 804.

¹ See vol. i., § 791 *a*, for an interesting letter of Mr. Lincoln on this case.

In the Philadelphia Evening Bulletin for July 4, 1860, appeared the following communication:—

"Messrs. Editors: An article in your issue of the second inst., from the Cleveland Plaindealer, entitled, 'False Personation at a Critical Moment,' at-

§ 781. To the general rule, however, two qualifications may be recognised. In the first place, when the deceased is proved by eye-

tracted my attention. It purports to be a confession of a notorious counterfeiter, by the name of Boorn, that he killed a man by the name of Cobley, forty years ago, in Vermont, and escaped by producing a man from New Jersey so much resembling Cobley as to induce the belief that he was the very man, and so cleared him from the gallows, and let him and his brother go free.

"Perhaps I can cast some light upon this most singular transaction. More than forty years since, a deranged man came to my father's house, near Tuckerton, New Jersey, hungry, ragged and dirty. He was cared for during the night. He said that he had been murdered in Vermont, and never would return there again. It was winter, and extremely cold. He walked across the bay on the ice, and lounged about the neighborhood for weeks; said his name was Russell Colvin, and his people lived in Vermont. He travelled up shore a few miles above Toms River, to the house of a Mr. Polhamus. The family so pitied him as to give him a home with them during the balance of his life. I have been there several times, and always have seen him attending to pigs and poultry about the farm. A number of years after he came there—say some fifteen years or less, I can't recollect—two men were tried, I think it was in Burlington, Vermont, for the murder of this same man. One was found guilty of murder in the first degree, and sentenced to be hanged; the other was sentenced to imprisonment for life.

"A lawyer, connected with the trial, deemed the case a most singular one, and inserted a notice in the paper inquiring if any one knew the said Russell Colvin, giving withal a description of the man. This caught the eye of a brother of Mr. Polhamus, at whose house the man Colvin was living. He forthwith wrote to said lawyer, detailing the above facts. Polhamus and the lawyer were soon on the way to New Jersey to see the murdered man. They found him there, and Colvin knew the lawyer, and called him by name at first sight. After some persuasion, his reluctance to go to Vermont was overcome, and all three started north. When they arrived in Burlington, the court-house was soon filled with an excited community, all anxious to see the dead man. Officers were soon collected, the prisoners were brought in, and they, as well as the community, recognised Colvin at once. The prisoners were discharged of course. Colvin's wife and two sons came to see him, and used every endeavor to induce him to go home and remain with them. All entreaty proved useless and vain; return to New Jersey he would and did, and lived many years after at the house of Mr. Polhamus.

"A pamphlet was published of the trial and all the facts therein stated, which I was reading one evening at the house of Mr. Polhamus, and in the presence of Mr. Colvin. He muttered all the time I was reading, until I had to lay it aside, as he was getting angry at the sight of it. Mrs. Polhamus said the sight of the book always enraged him." * * * * *

"*A Newspaper Account of the Affair.*—Mr. Barna Boorn, and his aged partner, were respectable inhabitants of Manchester, in the state of Vermont.

witnesses, inspection of the body is unnecessary. Thus, in a case in England, the prisoner, a seaman on board of the ship *Eolus*, was

They were the parents of a son and two daughters, besides the unhappy Stephen and Jesse, who figure in the story we are about to narrate.

"Sally, one of the daughters, became the mother of several children, all of whom were dispersed among their relatives, owing to the mental derangement of their father, which rendered him incapable of attending to his family concerns and of providing for them a necessary support.

"Mr. Colvin was in the habit of frequently absenting himself, without giving any previous information, and rambling in various parts of the country. At one time he was absent as long as nine or ten months, after which he was found in the state of Rhode Island.

"About eleven years after his marriage to Miss Boorn, he was again missing; which at the time caused little or no alarm, as it was expected that he would return as on former occasions. But after a lapse of several years, nothing having been heard of him, surmises were circulated that he had been murdered; and suspicion rested on his brothers-in-law, Stephen and Jesse Boorn, as his murderers. This suspicion was created by a reference to the frequent altercations that had taken place between Colvin and the Boorns previous to the disappearance of the former, and to some unguarded expression of the latter afterwards intimating that Colvin was dead, and by their occasionally showing some signs of compunction.

"A Mr. Boorn, uncle to Stephen and Jesse, a gentleman of respectability and unimpeachable character, dreamed that Russell Colvin came to his bedside and told him that he had been murdered, and he must follow him and he would lead him to the spot where he was buried. This was repeated three times. The deposit was a place talked of previous to the dream, which was where a house had formerly stood, and under it was a hole about four feet square, which was made for the purpose of burying potatoes, and then filled up. This pit was opened, and nothing discovered but a large knife, a penknife, and a button. Mrs. Colvin, anterior to their being presented to her, described them accurately, and on seeing them, said they belonged to her husband, excepting the small knife.

"A lad walking from Mr. Barna Boorn's, a small distance, with his dog, a hollow stump standing near the path engaged the notice of the spaniel, which ran to the place and back again several times, lifting up his feet on the boy, with whining notes, as though to draw the attention of his little master to the place, which had the effect. A cluster of bones was drawn from the roots of the stump by the dog's paws. Further examination was made, and in the cavity of the stump were found two toe-nails, to appearance belonging to a human foot; others were discovered in a crumbled state, which to appearance had passed through the fire. It was now concluded by many that some fragments of the body of Russell Colvin were found. The cluster of bones was brought before the Court of Inquiry. They were examined by a number of physicians, who thought them to be human; one of the profession, however, thought other-

charged with the murder of his captain. The first count of the indictment alleged the murder to have been committed by a blow from

wise. A Mr. Salisbury, about forty years previous, had his leg amputated, which was buried at the distance of four or five miles. The limb was dug up, and, by comparing, it was universally determined that the bones were not human. However, it was clear that the nails were human, and so appeared to all beholders. The bones were in a degree pulverized, but some pieces were in a tolerable state of preservation. Suspicions were excited that the body was burnt, and some parts not consumed cast into the stump, and other bones put among them for deception. Some time after the departure of Colvin, a barn belonging to Mr. Barna Boorn was consumed by fire accidentally; it was conjectured that the body was taken up and concealed under the barn, and mostly consumed. About that time a log heap was burnt by the Boorns, near the place where the body was supposed to be deposited; it was thought by some that it was consumed there.

"The subject occupied the attention of almost every mind in the neighborhood.

"Previous to the general excitement, Stephen Boorn, with his family, moved to Denmark, county of Lewis, state of New York, about two hundred miles from the place of his nativity, where they were comfortably settled; while Jesse remained in Manchester, where he was arrested and frequently brought before a Court of Inquiry. He at first boldly asserted his innocence; but after several days' confinement, and after every art made use of to induce him to criminate himself and his brother, and being told that a confession would probably be the means of obtaining his liberty, as strange and unaccountable as it may appear, he did confess that his brother Stephen had told him that he (Stephen) had given Colvin a blow, and laid him aside where no one could find him. Upon this, the authority issued a warrant to apprehend Stephen. Capt. Truman Hill, grand juryman for the town of Manchester, Squire Raymond, and Mr. R. Anderson, set out for Denmark, and arrived there in three days. They called on Mr. Eleazer Sylvester, inn-keeper, who, in the night, together with a Mr. Orange Clark and Mr. Hooper, belonging to the town, accompanied them to the house of the supposed criminal. Mr. Clark went in first, and began some conversation about temporal concerns; the others surrounded the house, and he was easily taken. The surprise and distress of Mrs. Boorn on this occasion are not easily described; they excited the compassion of those who had come to take away her husband, and they made her some presents. The prisoner was put in irons and brought to Manchester. He peremptorily asserted his innocence, and declared that he knew nothing about the murder of his brother-in-law. The prisoners were kept apart for a time, and assigned to separate cells. Nothing material transpired, and they were afterwards confined in one room."

"Stephen denied the evidence brought against him by Jesse, and treated him with severity. Both the prisoners were repeatedly admonished to pay the strictest regard to truth. Many days were taken up in public examinations of the reputed criminals. Circumstantial evidence was brought forward, which

a large piece of wood, and the second by throwing the deceased into the sea. It appeared in evidence that, while the ship was lying off

was much against them, and they were bound over to await their trial at the sitting of the Supreme Court, to be held at Manchester on the third Tuesday of September 1819.

"Jesse Boorn, after an interview with his brother, denied that Stephen ever told him that he killed Colvin, and that what he reported about him was false. For some time they both continued to assert their innocence; but being told that they would undoubtedly be convicted upon the testimony already against them, and hopes of pardon being held out if they would confess the crime, at last Stephen wrote a statement of what he said were facts, in which he acknowledged he killed Colvin, deposited him in the place where the knife and button were found; that he took the bones from that place and put them under his father's barn, which was soon after burned, and the body principally consumed.

"A person in jail with them for perjury testified to a full confession of the murder, made to him by Stephen and Jesse, and it was so artfully framed, so corroborated by other facts, that it had great weight with the court and jury, though it was wholly false. But he had his ends answered—he got bail by this means, and went off.

"During the interval, the prisoners were frequently visited by the Rev. Mr. Haynes, in his official capacity, but they did not discover any symptoms of compunction, persisting in declaring their innocence, with appeals to Heaven. Stephen particularly, at times, appeared absorbed in passion and impatience. One day Mr. Haynes introduced the example of Christ under suffering as a pattern worthy of imitation. He exclaimed, 'I am as innocent as Jesus Christ!' for which extravagant expression he was reproved. He replied, 'I don't mean that I am as guiltless as he was; I know I am a great sinner; but I am as innocent of killing Colvin as he was.' The court sat in September, and a judicious and impressive charge was given to the grand jury by his honor Judge Doolittle, and a bill of indictment was presented against Stephen and Jesse Boorn; but, as it was not a full court, the trial could not commence.

"The court was accordingly adjourned to the 26th of October, 1819. It was with much difficulty that a jury was obtained.

"The court ruled that Stephen and Jesse Boorn should be jointly tried for the murder of Russell Colvin.

"About fifty witnesses were successively examined, but they were only corroborative of each other, all tending to prove the leading facts, and too voluminous for this brief sketch.

"The jury retired, and within about one hour returned, and, in compliance with a request of Mr. Skinner, they were severally inquired of whether they had agreed upon a verdict, and each agreed that they had found both of the prisoners guilty of the murder charged against them. The verdict was then publicly read by the clerk. After a short recess his honor Judge Chase pro-

the coast of Africa, where there were several other vessels near, the prisoner was seen one night to take the captain up in his arms and

nounced the sentence, that the prisoners be remanded back to prison, and that, on the 28th day of January, between the hours of 10 and 2 o'clock, they should be hung by the neck until they were dead!

"Mr. Taber Chadwick, of Shrewsbury, Monmouth county, N. J., brother-in-law of Mr. William Polhamus, of Dover, in the same state, where Colvin had lived ever since April, 1813, seeing the account of the trial of the Boorns, at Manchester, wrote that Colvin was still alive, and with his brother-in-law, Polhamus, in Dover, about forty miles from Shrewsbury. When the letter came to town, every one was struck with consternation. A few partly believed, but the main doubted.

"'It cannot be that Colvin is alive,' was the general cry. Mr. Chadwick's letter was carried to the prison and read to Stephen; the news was so overwhelming, that, to use his own language, 'nature could scarcely sustain the shock'; but, as there was some doubt as to the truth of this report, it tended to prevent an immediate dissolution. He observed that he 'believed, had' Colvin then made his appearance, it would have caused immediate death; even now a faintness was created that was painful to endure.' Soon a letter was received from New York, stating that the man who was supposed to be murdered was probably still alive.

"Mr. Whelby, formerly of Manchester, and who was intimately acquainted with Colvin, had actually gone to New Jersey in quest of him. Thus there was increasing evidence in confirmation of the letter. As soon as Mr. Whelby had returned to New York, he immediately wrote that he 'had Colvin with him.' A New York paper announced his arrival also, and that he would soon set out for Vermont. Notwithstanding all this, many gave no credit to the report, but considered it a mere deception. Large bets were made. Colvin was unwilling to return to Vermont with Mr. Whelby, who was obliged to have recourse to stratagem. A young woman of Colvin's acquaintance agreed to accompany him, pretending that she only designed a visit New York. While there she was missing, which excited some uneasiness in the mind of the exile.

"While staying a few days at New York, to prevent his returning, Mr. Whelby told him there were British men-of-war lying in the harbor, and unless he kept within doors he would be kidnapped. This had the desired effect. Colvin, when he set out for Manchester, concluded that he was on his way home to New Jersey, and never perceived the deception until he came to Bennington, where he arrived on the 22d of December, and saw many people with whom he had formerly been acquainted, which filled him with surprise.

"The county court being then in session, all were filled with astonishment and surprise. The court suspended business for some hours, to gaze upon one who, in a sense, had been dead and was still alive again.

"Stephen related the facts amid great excitement and rejoicing, and Jesse was soon at liberty." See this case referred to vol. i., § 791 *a.*

throw him into the sea ; after which he was never seen or heard of; but near the place on the deck where the captain was seen, was found a billet of wood, and the deck and part of the prisoner's dress were stained with blood. On this, it was objected to by the prisoner's counsel that the *corpus delicti* was not proved, as the captain might have been taken up by some of the neighboring vessels ; but the court, although they admitted the general rule of law, left it to the jury to say, upon the evidence, whether the deceased was not killed before the body was cast into the sea, and, the jury being of that opinion, the prisoner was convicted and executed.

§ 782. When also it is shown that the body was destroyed by any chemical or mechanical agents, it is, of course, unnecessary that the existence of the remains should be proved.¹ Mr. Bentham naturally asked whether Lord Hale's rule would not have necessarily to be relaxed whenever a part of the guilty plot was the decomposition of the body in lime, or in any of the other known chemical menstrua, or of its being submerged in an unfathomable part of the sea. And the trial of Dr. Webster furnishes an apposite answer to this inquiry. Some portions of the deceased's body, it is true, were in this case recovered, and these enough to secure its identification, but had this not been the case, and had there been adequate positive evidence of the fact of guilt elsewhere, it is not likely that the result would have been different. That an entire destruction of the body is practicable was lately illustrated by a case but too familiar to the professional mind in this country. A gentleman of much respectability was accidentally caught under the rafters of a burning building, and when, a few hours after, his remains were sought for, nothing could be found that afforded the slightest index of identity. And still more complete would be the obliteration of this species of evidence by the method suggested by Mr. Bentham, of submerging in an unfathomable part of the sea. Murders on shipboard must generally be of this class, and yet the books abound with cases where this species of homicide has been punished. And the testimony taken in the Webster case, which is elsewhere reported in full, shows that by means of chemical *menstrua* there could be an entire immunity secured to guilt if the production of the remains be insisted on. Thus Dr. Jackson said "that the flesh of a human body, if cut up into small pieces and

¹ See fully Wh. Cr. Ev., §§ 324, *et seq.*, where this question is discussed at large.

boiled in potash, might be dissolved in two or three hours. Next to this the best substance to use in dissolving or disposing of a human body would, I think, be nitric acid, and the difficulty or danger attendant upon its use, so far as the evolution of noxious vapor is concerned would depend upon the degree of heat applied." Since, therefore, the destruction of the body is practicable, and since, if the production of the body be necessary to conviction, the worst species of homicide would go unpunished, it is obvious that the continued existence of the body cannot be considered, as is popularly supposed, essential to the judicial establishment of guilt. And, in fact, an examination even of Lord Hale's dictum, which is most relied on for the contrary opinion, shows that the "finding of the body dead" is only given as an alternative to "proving" that the fact was done. But when the *fact of death* is not positively and indisputably shown, there should be the severest scrutiny applied and the most conclusive evidence afforded, in order to make a conviction justifiable.¹

§ 783. In a case in North Carolina, in 1861, the defendant was indicted for the murder of one Peggy Hilton. There was evidence tending to show that the defendant had criminal intercourse with Peggy for a year or two. The deceased left her home on the night of the first of December 1859, about ten o'clock, and took with her one calico frock, two petticoats, and a piece of cloth, all of which were wrapped in her apron. She had not since been seen. Several days after her disappearance, the neighbors commenced to search for her. On the 11th of the same month they examined about a creek which flowed through the prisoner's land. About six hundred yards from defendant's house, on a private place near the creek, they discovered where a "log heap" had been burned. The fire was not out, but a few of the logs, or parts of the logs, were still burning. A search was made among the ashes, and a good many fragments of bones were found. Some of these were shown to the prisoner, but he denied knowing anything about them. Most of these bones were found in the centre of the log heap. They also found a substance in the ashes that was like tallow. On the twenty-third of January 1860, the coroner of the county, with many persons, went to the creek, with the purpose of making a further search and holding an

¹ For a full report of the Webster case in this relation, see Bemis's Webster Case, and Wh. on Hom., 2d ed., where the case is discussed in its several relations. As to other cases of identification see *ante*, §§ 297 *et seq.*

inquest. The creek was dragged and they found *bones*, three hair pins, three common pins, one button, one eye of a hook-and-eye, and a grain of wheat, also a black substance and fire coals, similar to those found in the place of the burnt log pile. Four physicians and one dentist were examined, who stated that among the bones they recognised part of a human skull and part of the cheek bone of a human being. The dentist deposed to the identity of human teeth among the bones exhibited in court. It was in evidence that Peggy Hilton was in the habit of wearing hair pins; also, that the Monday before she was missing (which was on Thursday) she got from the witness fourteen common pins, seven of which were large, and the others small ones. The court was requested to instruct the jury that there was no evidence in the case identifying the bones and pins found, as being part of the bones and apparel of the deceased. The court refused, but told the jury that there was evidence that the bones and pins found were a part of the body and dress of the deceased. Defendant's counsel excepted. On this and other exceptions the case came up to the Supreme Court. In the opinion given by that court, Judge Battle considers the authorities at some length, and concludes that there was no error in this part nor in any part of the charge.¹

II. THAT THE DEATH WAS FROM VIOLENCE.

1st. POISONING.

§ 784. (a) *Measures to be taken by the prosecution when poisoning is suspected.*—There should be a careful observation of the condition of the corpse, and of the peculiar indications upon it. Here it is that the services of an experienced and capable physician are needed.²

Everything in which the poison could have been brought to the deceased, or in which it could have been retained, must be examined. All parts of the dwelling should be searched, in reference to glasses, boxes or papers, in which poison, or the refuse of poison, may have been placed. This search should include utensils in which medicines taken by the deceased were placed.

No examination should be attempted except after notice to the

¹ *State v. Williams*, 7 Jones (N. C.) 446. Other cases will be found in Wh. Cr. Ev., §§ 325 *et seq.*

² See *supra*, §§ 326, 327, 337-40, 682-3; and for a case of alleged poisoning by arsenical injection, *People v. McCraney*, 6 Parker C. R. 49.

opposing interest, and opportunity given to such interest to be present. Examinations held without such notice are *ex parte*, and, except in strong and peculiar cases, their results should be excluded by the courts.¹

The evacuations of the deceased, whether through vomiting or the stool, and particularly his urine, should be carefully preserved and tested. Arsenic, as has already been shown, frequently passes into the urine, and its presence there is a proof that the poison has entered into the system. So, also, towels or linen on which these evacuations may have dried, should be examined.

Those parts of the body through which the poison may have passed, *e. g.*, the mouth or sexual organs, and those on which it may have acted directly or by resorption, *e. g.*, the stomach or liver, should be the object of examination. Particular poisons should be looked for in the organs which they may peculiarly touch, *e. g.*, the bones, into which quicksilver and arsenic pass.

§ 785. In view of the expected medical and chemical examination, it is necessary to carefully separate and preserve all parts of the body in which poison may be traced, so that, when the chemical analysis takes place, the parts may be kept free from foreign admixtures. The stomach, liver and spleen should be separated and kept in distinct vessels. Should this precaution not be observed, poison, which may have merely touched the mouth, may be imbibed after death, by other members, *e. g.*, the liver or spleen, so as to produce the belief that the whole system was pervaded by the poison, and from this, that a very large quantity had been administered.

The vessels in which these parts of the body are placed, preparatory to examination, should be carefully cleansed, and should be closed and sealed, so as to prevent the interference of third parties. The orifices should be carefully closed so as to prevent evaporation, or the disturbance consequent on the intrusion of air.

It is important that the parts retained for examination should be as large as practicable. If only small fragments are kept, the materials for a broad analysis are narrowed, and the opportunity for a second or third examination prevented.²

¹ See vol. i., § 296, and notes thereto; and also Wh. Cr. Ev., §§ 37, 50, 789, 791.

² See *supra*, § 682.

§ 786. In respect to the examination several cautions should be kept in mind.

It is desirable, in the choice of experts, by whom the examination is to be made, to avoid mere neophytes, and to confine the selection to those who have kept up with the advance of science, who have the proper instruments and materials at their command (*e. g.*, utensils and pure tests which can act as reagents), and who possess competent experience and skill. It is peculiarly important that the chemical examination should be committed to one who has made that department a specialty.

Much embarrassment has arisen from confusing the provinces of the physician and the chemist. According to Barse,¹ the cases have been frequent where there is an apparent conflict of testimony produced by the fact that the chemist, when examined on the trial, speaks from one stand-point, and the physician from another. The first is to be asked—

- (1) Whether the substance given to him to analyze contains an agent which belongs to the class of poisons :
- (2) What kind of poison is it :
- (3) In what quantity it exists ; though it is difficult and dangerous to decide in what quantity it was originally administered :
- (4) How it may have been administered, which chemical analysis may sometimes determine, as in the prosecution against the priest Mainieri, where the question was whether the crime could be effected through poisoned cigars :
- (5) Whether the poison was administered purely, or in common with other agents :
- (6) Whether the substance analyzed could have come into the body through natural causes (*e. g.*, as phosphorus through food).

§ 787. The physician's province includes more particularly the question whether the poison in the particular case could have produced death. With this are connected the presumptions to be drawn from the discovery of substances in the body which are used sometimes for medical purposes, sometimes for poisoning.²

¹ Manuel de la Cour d'Assizes, p. 224, as quoted by Mittermaier in his das Verbrechen der Vergiftung, etc.

² Each new examination bears out the important conclusion, that a substance whose poisonous properties are in themselves active, may, through contact with other substances, either entirely, or in great part, lose its peculiar properties.

§ 788. The chemical examination, to be satisfactory, must go to show that the reagents employed in the detection of the poison were

This may happen in various ways: (1) When, in the case of certain sorts of poison, the poisonous substance becomes inactive by uniting with substances which either neutralize its strength or form with it insoluble compounds; though it is to be observed that some poisons become more intense upon uniting with other substances, those, for example, which, by being externally applied, facilitate the entrance of the poison into the body, or which increase the excitement of the tissues by which it is diffused through the system. (2) When the poison, after being administered, meets with antidotal substances. This may happen when the poisoned person, either a short time before or immediately after the administration of the poison, has taken, as is often the case in food, substances which may act upon the poison so as to render it inactive. All these principles are important, not only in the investigation of the fact of poisoning, as whether the poison was the cause of death, if it appears that the union of the poison with other substances must have rendered it inactive; but also in the settlement of the question how far criminal attempt is supposable in the case.

We subjoin a marked case which illustrates this point:—

A girl of fifteen years of age was tried before the Criminal Court of Verona, for a malicious attempt to poison her servant-woman with sulphuric acid. She mixed the poison in a glass in which some brandy was standing, which the woman was in the habit of taking before going to bed. Although the altered color of the liquid in the glass arrested the woman's attention, she nevertheless took a swallow of it, but immediately spit it out when she perceived its burning taste, as did also another woman who tried the mixture. The girl confessed her crime, at first with the declaration that she had intended to kill her servant, but afterwards that she had only wished to give her a pain in the stomach. It appeared that eighty-three grains of sulphuric acid and two hundred and forty-one grains of brandy were in the glass. According to the opinion of the experts (two chemists and two physicians), the concentrated sulphuric acid, by being mixed with the brandy, had considerably lost its strength, being in great measure converted into *acidum Halleri*, which is used as a medicine. The investigation in relation to the matter of fact hinged principally upon the inquiry how far, in the mixture of sulphuric acid with a much greater proportion of liquor, the poisonous properties of the former will be destroyed or weakened through the influence of the essential oil of the brandy. On this point there is great difference of opinion, but it is to be remarked that never before, perhaps, in the annals of medical jurisprudence, have these points been so thoroughly discussed. The effect of the time during which the poison was subjected to the action of the diluting mixture was also a point of dispute, as also the determination of the condition under which the health of the poisoned person might be injured notwithstanding that the detection of the poison was so easy, and that she must have been warned against the mixture by its offensive taste. We may notice here the importance of the *individuality* of the servant-woman, and especially whether her sense of smell was delicate; whether she

pure, and contained no elements likely to deposit the poison they were employed to discover. Sometimes the presence of the poison is produced by the reagent. It is important, also, to show that the examination was adapted to the particular kind of poison which was sought. Poisons are very various in their action, some working the most energetically when they come to the stomach, some when they touch a place where the skin is removed, some at the spot they first reach, others only upon the system generally. The local effect also greatly varies. Mineral acids so disorganize the part that its whole structure is destroyed. Metallic poisons inflame and irritate, without immediately destroying the texture. Others—*e. g.*, nicotine—without perceptible changes of structure, merely operate upon the sensitive parts of the organs with which they come in contact. These points should be kept in mind in directing the examination of a chemical witness.¹

§ 789. In the examination of medical witnesses, the points are more numerous. The main question is of course whether the derangement under consideration was caused by poison. This involves the consideration (1), of the chemical examinations, (2), of the symptoms of the malady, and (3), the appearances on the corpse.

The symptoms of the malady fall within the physician's peculiar province, and have been already discussed.² On the second of these was in the habit of swallowing the liquor at a draught or of drinking it with pauses; also whether she took the liquor oftener in the dark, or near a light where its changed appearance would put her on her guard. The theory was advanced that the attempt was made with absolutely unfit, not to say inadequate means, and hence should be classed under the head of criminal attempt in the second degree. The Criminal Court, however, laying aside this theory, took the matter-of-fact view of the case, and sentenced the accused to five years' severe imprisonment for attempt at murder by poison. The Court of Appeals of Venice, on the contrary, held that from the circumstances, the possibility of death should not be assumed, since, according to the testimony of the experts, it could not have followed unless the poisonous drink had been taken in greater quantity. In this view the court acquitted the accused of attempt at murder, but condemned her to two years' imprisonment for an attempt to inflict severe bodily harm. It is to be remarked in connection with this case, how important it is in a trial for poisoning to attend to the circumstance that the original nature of the poison may become changed by the medium in which it is administered, and especially at the time during which it is subjected to the action of the substance used for the mixture and of the atmospheric air, may materially alter its poisonous properties.

¹ See *supra*, §§ 700 *et seq.*

² See vol. ii. of the present edition.

points, the journal or note-book of the physician may be appealed to by him to refresh his memory, though it should be remembered that a physician in large business, when he makes his notes at the close of a day in which he has made many visits, is very apt to fail in a delicate discrimination of symptoms, and is at all events, where he suspects no imposition, likely to be influenced by the talk of those surrounding the patient.

The testimony of persons attending the patient, though not in themselves experts, may be introduced as supplementary to that of the physician. It should be observed, however, that such witnesses are very easily deceived, and are apt to take strong prejudices, sometimes against the hypothesis of poisoning, either to avoid the disgrace falling on the family, or from false sympathy with the accused, sometimes, from passion or excitement; or the desire to shift the blame, in favor of that hypothesis.¹

¹ At the close of Volume II. of the present edition of this work will be found a series of poison cases examined from a medical standpoint. To these the following may be added, taken from the volume of "Reports of Trials for Murder by Poisoning," published in London in 1883 by Messrs. Brown & Stewart. The prisoner, Silas Barlow, an engine driver on the South-Western Railway, about a year before the trial, on being left a widower, had formed a connection with the deceased, who, with their infant, came to lodge at the house of a Mrs. Wilson, in Leopold street, Vauxhall, in August, 1876, under the name of Smith, where she was occasionally visited by the prisoner, who passed as her husband. Apparently they lived together on kindly terms, and were in fairly comfortable circumstances. On the 3d of September the prisoner visited her about half past eight in the evening, and stayed an hour. Up to that day the deceased had been in good health. As soon, however, as the prisoner left, she came down from her room, knocked at the landlady's door and complained to her that she was very sick from the sarsaparilla which he had given her. "Her lips were white, she was very nervous, and appeared hardly able to stand," said Mrs. Wilson. "I had never seen her so before. She went up stairs, and when I went to bed I went to her. She was retching very much, and sitting in a chair. I then went away. Next morning I saw her; she came down stairs and said she was very bad—worse. She could not stand, and had to lean against the wall. During the day she became better." The prisoner came again on the Sunday following at the same time as before. "The deceased," said Mrs. Wilson, "was at the street door talking to me with her baby, and in perfect health. They went up into their room, and in about an hour the prisoner knocked at my room door and said his wife had had two fits. I ran up stairs and found her lying across the bed; the prisoner was in the room. She was in a kind of fit or convulsion. I sent the prisoner for some brandy and water. She became a little conscious, and taking me by the

§ 790. Other facts should be noticed in this connection, such as complaints of the patient as to burning in the intestines, redness of the face, sweating, which symptoms should be always noticed.

hand said, 'Don't touch me.' She had been unconscious, but the moment she was touched she went into convulsions. Her feet and hands were clenched, and she was drawn quite backwards, her back forming an entire arch. She was not conscious then. The prisoner was holding her all the time. About half past ten I sent him for Dr. Miller, who came at once and applied mustard plasters, remaining with her about five minutes, and the prisoner going back with him for medicine. She was slightly conscious when Dr. Miller came, and more so afterwards. Her feet were quite white (this is probably an error of the reporter—rigid), the toes being drawn backwards to the soles of the feet. I did what the doctor told me, but it did not do her any good. I tried to give her the medicine, but she could not take it, and went off in a swoon. She had licked the spoon. She then had dreadful convulsions, one in particular, when it took the prisoner and me to hold her. Her neck was drawn backwards and quite arched. After that she became quite conscious, and said it was the nasty sarsaparilla that made her ill. The prisoner said, 'Oh, no, I have taken more of it than you.' He also said, 'I have given her two pills and taken two myself.' She complained of a dreadful pain in her heart, and continued unconscious, coming to herself a little at times, but very slightly. The convulsions were dreadful, and she died about two o'clock on the 11th. She seemed to droop instantly after a dreadful convolution. I gave her two doses of the medicine the doctor sent. I had not seen any sarsaparilla in the room."

On cross-examination by Mr. Fulton, after stating that she had never heard any quarrels between prisoner and the deceased, she gave the following further particulars as to the symptoms:—

"In the evening when I was called in, her eyes were partly closed during the convulsions; her breathing very hot (hard?) and at most suspended; her teeth entirely clenched and also her hands during the convulsions. She wanted to be sick shortly before her death; her lips were pale, and remained so until her death. The prisoner tried to move her, when she became very sick, and she went into convulsions. He helped to hold her, and said he could not imagine what was the matter with her; seemed distressed, and sat on the bed holding her. To all appearance he was kind to her, but not affectionate. She was more unconscious than conscious during the whole time. About twelve o'clock she appeared quite conscious. She had to move herself so that she could be sick, and caught hold of the bed head, and then went again into convulsions. Virtually she was unconscious the whole time. Doctor Miller came a second time, and she told him she had had some fearful fits, but I cannot recollect whether I said anything about the arching. There was none when he saw her, but her feet were curved, and I told him about the 'shakings,' I mean the 'convulsions.' I first heard from the coroner's officer that she had died of strychnia. I had previously told him the symptoms attending her death, but

According to Mittermaier, from whose essay on the Crime of Poisoning (das Verbrechen der Vergiftung) we have reduced some of the don't remember telling him of the 'arching.' He said there was every appearance of her having died of strychnia."

James Miller, medical assistant at the Vauxhall dispensary, before that with Mr. Scott, a general practitioner, and previously an insurance agent, gave the following account of the case:—

"About twenty minutes to eleven on the 10th of September I was called by the prisoner to his wife, who he said had had two fainting fits. I found her lying in bed, dressed and quite conscious. She lay there very quietly. She said she had a severe pain in the legs, and that she had fainted twice. I asked her if she had complained during the week. She said only of pains in the head. I found the calves of the legs very rigid, her feet turned slightly inwards, the toes of each foot inclined towards the other as she lay, cramp in the lower limbs, her arms quiet. She beat her breast at times. Her hands were partly closed, her heart very excited, and her breathing slightly labored. Her heart continued excited all the time I was there, about five minutes. I asked her what she had taken. She said a cup of tea in the morning and a herring at tea. She said she had pain in her head all the last week. I believed she was suffering from epilepsy. On leaving, the prisoner returned with me. I made up a bottle of medicine, anti-spasmodic, which he took away with him. I never saw her again alive."

On cross-examination he said: "He did not notice any such 'arching' as the witness, Wilson, spoke of, nor did she mention it to him as one of the symptoms. Nor should he call what he saw of the feet 'arching.' He had only seen one case of epilepsy before—that was twelve months ago—and the symptoms in it were very similar to what he saw in the deceased. He saw the body immediately after death; there was no 'arching' of it then. If there had been he should have seen it. She was lying with her clothes on, on the bed. If there had been any marked rigidity of the body he should have observed it; that was a quarter of an hour after death."

Re-examined by Mr. Poland.—"She had her clothes on when he saw her, and part of her body might have been covered with the bedclothes. In the case of epilepsy he referred to, the person died in six hours. He prescribed no pills, only the mixture."

Proof was then given of the finding in the prisoner's room of six bottles of medicine, a box with two pills, and a packet of powder in dirty paper, and of their delivery to Dr. Tees, and subsequently to Dr. Bernays for analysis. It was not, however, until suspicions were aroused by other circumstances (the finding of the body of the infant in the river) that a post-mortem examination was held by Dr. Tees, and the contents of the stomach and other interior parts of the body analysed by him, and subsequently handed to Dr. Bernays for the same purpose. In one of the bottles Dr. Bernays found a distinct sediment of Prussian blue, pointing clearly to some vermin killer. Subsequently two kinds of these dangerous preparations were submitted to and analysed by him.

Analytical Evidence.—Dr. Lees, M. D., of the Brixton Road, on the 18th of

above points, inquiries on the following topics should be permitted to the medical witnesses :—

September, made a post-mortem examination of the body in conjunction with Dr. Lewis. They found no morbid appearances to indicate the cause of death ; the limbs were somewhat rigid, the body fairly nourished and in the stomach no sign of irritant poison. "It contained," said the witness, "six ounces of a thin, reddish fluid. I put the stomach and contents into a jar, and the viscera into another. I received the bottles from the constable and the paper of powder, and saw some pills at the inquest. Among the bottles was one of the large ones, which appeared to have contained a few ounces of good sarsaparilla—it was empty and rinsed out. One bottle contained about two grains of dried powder, adhering to the bottle. I added to the bottle a few drachms of water, two drachms of spirits of wine, thirty drops of hydrochloric acid, and two grains of dried powder. My purpose up to that time was to test for strychnia, but was frustrated. What I had done was not sufficient to enable me to form an opinion. I had previously analysed a portion of a two-ounce phial, containing half a drachm, or thirty drops of a reddish-brown fluid—half a spoonful. I first tested five drops, and obtained clear evidence of strychnia. I was enabled to separate from the rest a substance that yielded strychnia. I used three separate tests ; the second time with ten drops, and obtained needle-shaped crystals. I showed the colon to Dr. Bernays. I did not test the bottle for any other purpose. I left the rest (five drops) in the bottle and corked it up. Half a grain of strychnia is a fatal dose. I have been in practice fourteen years, and am of opinion that if Mrs. Wilson's description of the symptoms is correct, they were consistent with death from strychnia. They only resemble the disease known as idiopathic tetanus. If Mrs. Wilson's description is correct, the symptoms were not consistent with anything I know except death by strychnia—it came on so rapidly. If strychnia were administered in solution the symptoms would come on in a very few minutes. Strychnia occasionally produces irritation of the stomach. The symptoms of poisoning by it are the rapid occurrence of twitchings in the limbs, and rigidity of the muscles of the limbs, usually commencing in the lower extremities ; the sense of weight on the chest, the extension of the spasms to the muscles of the trunks, the arching back of the head, the intervals of consciousness, the absence of any great difficulty in swallowing, and death in six hours. Mr. Miller's evidence is consistent with death from strychnia."

The cross-examination was, as in Mrs. Wilson's case, directed to the eliciting admissions in favor of the opinion, at first adopted by Mr. Miller, that the death was due to epilepsy. "Leaving out the 'arching'" (*pisthotonus*), said the witness, "I should hesitate to say she died of strychnia ; it is a leading symptom, and also that the intellect was clear at intervals. Vomiting is not usual in epilepsy. It was eight days after death that I examined the body. There was then no rigidity beyond what I might expect in death. The lungs were congested, the heart flabby and decomposed, spongy from putrefaction, and containing a little coagulated blood. Taking the appearances of the whole post-mortem examination, there were no marked ones to account for death."

(1) The condition of health of the deceased at the time when the poison was administered, involving the absence of sickness or

Dr. A. J. Bernays, professor of chemistry at St. Thomas's Hospital, to whom the bottles and powder found in the room, the jars with the stomach, intestines, and viscera, and a bottle supposed to contain vomit, had been handed on the 28th of October, reported the results of his analysis of their contents. "In the organs (the lungs, heart, liver, kidneys, intestines, spleen, and blood) he found no poison of any kind. The stomach was inflamed, and there was a trace of strychnia, but of no other poison. In one bottle of medicine, opium, myrrh, but no strychnia, were found, and in another only peppermint and assafoetida. The powder was innocuous, consisting of old mustard and fenugreek. In one nearly empty bottle was found a distinct sediment of Prussian blue, one of the usual ingredients in vermin powder. He was satisfied that what Dr. Lees showed him on a watch glass was strychnia; on testing it was found to contain the 1000th of a grain. On the 31st of October the inspector brought two packets labelled, Battle's Vermin-Killer, Poison, Lincoln—a light blue powder, a three-penny and a six-penny packet. The first consisted of fifteen grains, containing wheat flour, Prussian blue and crystallized strychnia. The second packet, of the same composition as the first, weighed thirty grains. The amount of strychnia was in the three-penny packet 10.69 per cent., in the six-penny packet 10.06 per cent., corresponding to 1.6 grains in the smaller packet. On the 9th November a three-penny and six-penny packet of Butler's Gloucestershire Vermin and Insect-Killer, for killing rats and mice, etc., was received, marked poison. The weight of the two was fifty-six grains. It was a gray powder, containing flour, soot, and barium carbonate, but no strychnia; but another packet of the same came contained flour, soot, and strychnia, but no barium carbonate. These 'vermin-killers,' if used at all, should never be made or sold except by the legitimate pharmacists of the country, and under proper precautions."

Mr. Justice Denman.—"A very proper suggestion for the consideration of the legislature."

Mr. Thomas Stephenson, M. D., lecturer in chemistry at Guy's Hospital, agreed with Dr. Tees and Dr. Bernays, and had no doubt of the correctness of their experiments.

It was also proved by the prisoner's brother-in-law that the prisoner was in the habit of taking sarsaparilla, and that whilst the prisoner lodged with him, the witness had been using Battle's Vermin-Killer, as he was troubled with mice in his room. This he had bought at a shop in the Vauxhall Road, but he did not recollect having any of it left, or the prisoner using it in his room. The prisoner had left Mrs. Wilson a few hours after the woman's death, saying he was going to telegraph down the line and would be absent till the evening. He did not return until about nine on the morning of the 11th, when he said his cousin would take the child, which Mrs. Wilson dressed and gave to him, and never saw it again until the 15th, when it was lying dead in a public house at Battersea, having been found drowned in the river. He also promised Mrs.

of constitutional disease capable of producing death, down to this period.

(2) The conditions preceding the alleged poisoning, as whether the patient was in the habit of taking strong drinks, whether this occurred on the day when the disease broke out, what food he had been taking, and how far the same indications would have been produced if he had been overheated or caught cold, or had fallen into a violent passion.

(3) Those peculiar circumstances which from their rarity and general association with poisoning are supposed to have produced the latter, *e. g.*, the sudden illness after eating or drinking of a person previously in good health. It should be observed, however, that such attacks often follow meals when the food was perfectly healthy, and that on the other hand poison in many cases does not work until some time after it has been received into the frame.

(4) The medicines which the patient had taken, and particularly the antidotes, must be inquired into, since poisonous substances are often introduced through the antidotes themselves.

(5) Such circumstances as tend to show the possible agency of a natural disease, *e. g.*, cholera.

(6) There should be a jealous scrutiny of facts tending to show that poison may have been induced by means of prior external and innocent applications. Madame Lacoste's case is cited by Mittermaier as an illustration of the importance of this caution. In that case the appearance of arsenic was explained by the fact that the deceased had

Wilson that he would attend the woman's funeral, but did not, and told her on one occasion that he always had strychnia by him.

For the defence Mr. Fulton urged that the evidence of the "arching" of the body was very vague, and rested only on the word of Mrs. Wilson, who had not mentioned this important symptom either to the doctor or the coroner's constable, and that without that symptom the death might be accounted for by epilepsy and the first opinion of Dr. Miller justified. He endeavored to minimise the evidence of the analysis, and argued that the conduct of the prisoner in his attendance on his wife was strong proof of his innocence. "Motive," he said, "there appeared to be none, as from his wages the prisoner was quite able to bear the expense of the mother and child."

The jury, however, returned a verdict of "guilty," and the prisoner was executed on 2d of December, admitting the justice of his sentence, and that he was a party to the death of the child, but saying others were in it.

been for some time in the habit of using externally a salve, through which it is possible the poison may have been worked in.¹

¹ Dr. George Henry Lamson was indicted in England in 1882, for the murder of his brother-in-law, Percy Malcom John, at Blenheim House, Wimbledon, on December 3d, 1881. The history of the case, as given by Messrs. Brown & Stewart, in their Reports of Trials by Poisoning (London, 1883, p. 516), is as follows:—

"In the winter of 1881, among the pupils at the school of Mr. Bedbrook, of Blenheim House, Wimbledon, was Percy Malcom John, the youngest of the five children of a Manchester merchant, a lad of about 19 years of age, a sad sufferer from paralysis of the lower limbs produced by curvature of the spine, but in a fair state of health. Since the death of their mother in 1869, the children had been orphan wards in Chancery, and previously to 1881, one brother and one sister had died under age, another sister had married Mr. Chapman, and the third, the prisoner, a medical practitioner at Bournemouth, who was now indicted for the murder of his brother-in-law. By the wills of their parents, the children, as they came of age or married, were entitled to the family property in equal shares, those of such as died under age passing to the survivors. Hence, at the time of his death, Percy John had property in expectancy to the amount of 3000*l.*, which, in event of his death as a minor, would be equally divided between his two married sisters, and by the settlement made by Mrs. Lamson on her marriage, her share would come into the hands of the prisoner. Though such a sad sufferer from paralysis as to be unable to move about readily except in a wheel-chair, and only able to drag himself backwards up a few stairs, there were no symptoms of serious bodily illness in the lad ; his temper was good, and his intelligence fair. In his brother-in-law's health Lamson appeared to take great interest, visiting him at school, having him stay in his own house, and sending to his master from America some medicines which he stated had been found useful in that country in similar cases. On the 1st of December, the prisoner wrote to the boy that he would come to see him the next evening, before he left for Paris—a promise which he failed to keep. On the 3d, however, about seven in the evening, he came, bringing with him some sweets, a cake, and a box containing gelatine capsules, which he told the master he had brought for him from America, as convenient for enabling him to administer nauseous medicines to his pupils. At this interview with his brother-in-law, he persuaded Mr. Bedbrook, who was present, to take one of these capsules to try how easily they were swallowed. Whilst doing so, the master noticed that the prisoner was filling another with some powdered sugar which he had asked for, on the plea of destroying the alcohol in some wine of which he was partaking. When he had put in the sugar, the prisoner, turning to the lad, shook up the capsule saying, 'It has to be shaken in order that the medicine may go to the bottom. You are good at taking medicine ; take this.' The boy swallowed the capsule, and within a few minutes after the prisoner, saying he wanted to catch the tidal-train for Paris left the schoolhouse. In about twenty minutes afterwards Percy complained of heart-

§ 791. (7) Appearances at the time of death, and changes in the corpse. Those who lay out the dead are often more observant and

burn, gradually became worse, was carried up to bed and vomited largely in the closet. ‘He felt,’ he said, ‘as he had done in the previous August when the prisoner gave him a pill in the Isle of Wight.’ He was in great pain, violently restless, and with difficulty kept down by those who were holding him. After more simple remedies had failed to relieve him, the doctors who had been called in injected morphia under the skin, which had a temporary effect. This was subsequently repeated, but with no apparent result, and shortly afterwards he died, within four hours of swallowing the capsule. The post-mortem examination revealed no signs of such a natural form of disease as would account for his sudden death—the only sign of disease being the long standing curvature of the spine, distressing, but at that time innocuous. A chemical analysis of the stomach and other parts of the body was had, and, so far as the present state of scientific knowledge could decide, it was the firm opinion of the experienced analysts, Drs. Stevenson and Dupré, that death was due to an irritant vegetable poison, and that poison was aconitum, a most highly poisonous vegetable alkaloid, containing the active principle of aconite, the product of the root of monkshood. Suspicion fell naturally on the prisoner, and was greatly increased when it was discovered that a few days before his last visit to the boy he had purchased aconitum in London, and that previously to the illness of the deceased in the Isle of Wight, the prisoner had also purchased of a druggist at Shanklin some of this deadly poison. In the meantime the prisoner had gone to Paris, whence on the 8th of December he unexpectedly returned, presented himself to the police at Scotland Yard, in consequence, as he said, of the reports he had seen in the papers, and, apparently to his surprise, was taken into custody. Other incidents in the prisoner’s career and conduct gradually came to light. Whilst in practice as a surgeon at Bournemouth he had been in great pecuniary difficulties, though he had received his share of the property of that one of the children who had died a minor; an execution had been put into his house, and at the time of the murder he was admittedly in straitened circumstances. Again, in the boy’s boxes at school, in addition to some genuine quinine powders purchased of a chemist in the Isle of Wight, and proved to be free of poison which had been sent to the boy by the prisoner, were three heavily charged with aconitum, and two pills containing this deadly drug. Again, he had written to the boy on the 1st of December that he would call on him on his way to Paris next day. He went to Wimbledon, however, on the evening of the 2d, with his friend, a Mr. Tulloch, whom he left at the station whilst he professed to have gone to the school and to whom he said that ‘he had seen his brother-in-law, who was much worse, and that he did not expect he would live long, and that he would not go on to Paris that night, as Mr. Bedbrook, who was a director of a continental line, had told him that there was a bad boat on.’ All this was untrue. He had never been to the school, and Mr. Bedbrook had nothing to do with any continental line. He had invented the whole story. In the trial that followed, the interest centered

accurate, so far as extraordinary appearances are concerned, than casual observers. But it is not enough, to raise a rational presumption

on the impossibility of detecting vegetable poisons by any chemical tests, and on the necessity, as in Dr. Pritchard's case, with aconite, of relying on the test of tasting the extract from the various parts of the body. On this test, supported by the effects observed on injecting drops of the extract under the skins of mice, which successively died of the operation, and exhibited the same symptoms before death as resulted from similar injections of pure aconitum, depended the proof that the death resulted from this poison.

In his charge to the jury, after pointing out that the two points to which they had to direct their attention were whether the boy died from poison or a natural disease, and if by poison, whether it was administered to him by the prisoner, Sir Henry Hawkins (who presided) alluded to the alleged motive—the prospect of an accession of fortune at the time when the prisoner was in great pecuniary difficulties—and the fact that until the day of his death the deceased, though a cripple, was free from any mortal disease. Then after referring to the details of the prisoner's visit to the boy on the 3d of December, the judge made the following remarks on the results of the chemical analysis, and the comments of Mr. Williams on them: "The presence of morphia was, he said, accounted for as it had been injected beneath the skin for the purpose of allaying the pain. With regard to the dark fluid in the stomach, it contained, according to the evidence of Dr. Stevenson, traces of food, an apple and a raisin, and from it an alkaloidal extract was obtained; on applying which to the tongue a slight taste of aconitum was produced. The sensation extended to the lip, although the extract did not touch it. The sensation was a burning, tingling, numbing one, difficult to define. Salivation and a desire to expectorate were produced, there was a sensation at the back of the throat, a swelling up; this was followed by a peculiar seared sensation of the tongue, as though a hot iron had been passed over it, or strong caustic. Experiments were made with extracts from the liver, spleen, and kidneys, from the dark fluid, and from the stomach itself, and within nine minutes mice showed symptoms of poisoning, and died in about twenty-two minutes afterwards. The same sensation, in fact was produced on the mice as had been produced on his own tongue previously. In the urine there was a taste of aconitum, which brought on a sickening and a burning sensation. Mr. Montague Williams had said that the experiments upon mice were hardly a test as to what the effect of the extracts would be on human beings. Granted; but they were about the only tests that could properly be made, and they proved the presence of aconitum. The drug, Dr. Stevenson said, produced a sensation to the tongue and throat which was unmistakable, and its property of killing was proved by its test upon the mice. Could they believe Dr. Stephenson mistaken about that, it was asked? Were there not other vegetable alkaloids? There were; and Dr. Stevenson said they all had peculiar tastes which differed from that of aconitum. He further said, that having made himself acquainted with between 50 and 80 vegetable alkaloids, aconitum differed in taste from any of them. The learned judge proceeded to read the evidence given by Dr. Stevenson as to the

of poisoning, that the signs heretofore mentioned, *e. g.*, blotches, perforations, etc., should be noticed. These are the accompaniments of

action of the extract and of prepared aconitia on the mice. Dr. Stevenson had minutely examined the vomit to endeavor to trace some of the fibre of monkshood from which aconite was extracted, and which as was known, had sometimes been mistaken for horse-radish, but not a particle could he find ; but he obtained all the symptoms of aconitia upon his tongue, and death resulted in 15½ minutes when a small quantity was injected into the back of a mouse ; he gave it as his opinion that 1-13th of a grain was sufficient to kill, and that he found enough aconitia in the stomach to cause the death of two persons. Dr. Stevenson had been submitted to a severe cross-examination, and it would be for the jury to say whether they believed that he had really found aconitia. Mr. Williams had said they were embarking in a new region in aconitia poisoning : it might be they were not very learned in it, though they would doubtless advance as fresh experiments were made and fresh tests applied. At present it was true there was no chemical test. That was admitted. Mr. Williams in the course of his cross-examination, had spoken of phosphoric acid, but Dr. Stevenson said that only applied to foreign aconitia, and not to Mason's English preparation ; they had before them the explanation of Dr. Stevenson ; it stood for what it was worth, and it was for them to say if he was correct, after the experiments he had made, in saying that he had found aconitia. Dr. Stevenson had explained the only tests, physiological and otherwise, to trace aconitia, and had formed his opinion that death arose from that substance. With reference to cadaveric alkaloids, Dr. Stevenson did not admit that poisonous cadaveric alkaloids were to be found in the human body. He did not dispute there were cadaveric alkaloids, but he disputed their being poisonous ; he did not say they were not so ; it was still an open question. The result of the twenty-two experiments he had made by tasting cadaveric alkaloids never gave him any taste like aconitia, and in only one case did death ensue to a mouse experimented upon, which was where the little animal's spine was injured by the needle used for the injection. Another circumstance spoken to by Mr. Dupré was that no trace of quinine was found in the vomit, but that might be due to the fact that a portion of the vomit, was thrown away. Upon the testimony as to the cause of death the prosecution said that there was no possibility of accounting for death by natural causes, and it was for the jury to say whether the death was from aconitia."

Then going through the evidence of the prisoner's pecuniary embarrassments, he alluded to the sending of the pills from America as showing that if he had entertained the design of poisoning the boy, he had done so long before the fatal act.

Mischief, it was held, had been concocted long before the lad died. Prisoner went to America in the early part of 1881, and returned about the 2d of July, and whilst there, as Mr. Bedbrook had said, he sent over a box of pills, saying that he had found them to be useful in the complaint under which the boy suffered. The boy had one pill given to him, and Mr. Bedbrook believed that as he did not like it he took the box and threw the remainder away. In the month

several natural diseases. On the other hand, these features should not be neglected, since there are many of them which tend to indi-

of August, aconitia was, it was said, administered to the boy whilst at Shanklin, and that it came from powders contained in a box. These circumstances did not lead to death, but they indicated, as was contended, the desire of the prisoner to do mischief to the unfortunate boy. It was a question certainly, whether the pills given were the same as those which the prisoner sent from America, and which Mr. Bedbrook believed he had thrown away. In the bedroom at Wimbledon was found a box of quinine powders, six large and fourteen small ones. Eleven of the small ones were of pure quinine, but three of them were more or less mixed with aconitia. Dr. Stevenson said that one of the powders (No. 16) contained one and eight-tenths of a grain, and that the proportion of quinine to aconitia in it was as 83 to 96. Dr. Stevenson tested it, and the sensation upon his tongue lasted three hours. One-fiftieth of a grain was tried on a mouse, and it was dead in six minutes and a half afterwards. They would judge how fatal a quantity was in the powder if they bore in mind what they had been told as to the fatality of one-thirteenth part of a grain. In Nos. 17 and 19 there was some trace of aconitia, but in neither of them anything like the quantity in No. 16. The box in which those powders were found had been in common use and one of the boys had actually taken one of them. Anybody, of course, might have taken one of the eleven pure powders, and the lad himself—with exception of once at Shanklin—had never shown any symptoms that might be considered anything like aconitia poisoning. No doubt three of the powders did contain aconitia in considerable quantities, and they had to consider how did the aconitia come into them. Among other things found in the boy's box were two pills in a tin pill-box. A tin pill-box, it was suggested, was sent over from America. Mr. Williams said that Mr. Bedbrook stated that he had destroyed them, but the fact remained that the box with the two pills—one of which was poisoned—were found in the pill-box. It was true there was no evidence that the box was the same, but Mr. Bedbrook said it resembled that which he received from America, but which he said he thought he had destroyed."

Mr. Williams.—“Pardon me, my Lord, but Mr. Bedbrook, I think, never said he destroyed the box; he said he had destroyed the pills.”

The Judge.—“I think he said he threw them away.”

His Lordship referred to his notes, and said that Mr. Bedbrooke in his evidence stated that he took the box downstairs and was under the impression he threw it away. When he saw the box, however, it appeared to him exactly like that which came from America, and the pills were also exactly like them.

Mr. Williams.—“Mr. Bedbrooke said he never gave the pills back to the deceased boy.”

The Judge.—“That is so. He said he was under the impression he had thrown them away. It was said that the boy could not get aconitia himself, but though he could not do so the prisoner could. Next they heard what had occurred at Shanklin in October, 1881. The prisoner was going to America, and sailed on

viduate the poison, as in the case of strychnine, where there is an extraordinary rigidity and long-continued contraction of the muscles.

the 30th August. On the 27th of that month Mr. and Mrs. Chapman, with the boy, went to Shanklin, and found on the platform to meet them the prisoner and his wife. They had some conversation, and prisoner promised to call on Monday, 29th, to say 'good-by.' On the night of Sunday, the 28th, they had it, on the testimony of Mr. Smith, a chemist, that the prisoner called on him and bought, amongst other things, three grains of atropia and one of aconitum. It was endeavored to be shown on the part of the prosecution that he had called pursuant to his promise on the 29th, and in evidence of that it was sought to produce the cloakroom book of the railway station. On the 29th, however, the boy was unquestionably unwell. It was clear that on the 27th the prisoner saw him, and said he would call again on Monday, but there was no direct evidence that he did, although he bought aconitum on the 28th, which Mr. Williams said might have been bought with an innocent motive, as the prisoner at the time was suffering from neuralgia."

Reviewing then the prisoner's conduct in London, and the story invented by him about his pretended visit to the boy on the 2d of December, "which," he said, "did not amount to much, but must be taken, with the other circumstances of the case, to show that the prisoner's word was not to be relied on," the learned judge then referred to the incidents of the fatal night. As to the two boxes of capsules, he continued:—

"The prosecution suggested that these two boxes of capsules were brought by the prisoner, but they did not suggest there was poison in any of them. They were clearly innocent capsules, as two of them did no harm either to Mr. Bedbrook or to the lad Banbury, each of whom swallowed one. What the prosecution suggested, however, was that whilst Mr. Bedbrook was examining the capsule he had taken from the box, the prisoner took another, in which there was aconitum, from another box, and that over that aconitum he put in the sugar and then administered it to the boy. That was the suggestion made. They asked for those facts to be put together—the boy was in as good health as he ordinarily was, in as good spirits as usual, having neither eaten nor partaken of anything in which there was a suggestion of poison during the day, and yet within half an hour, or less, of seeing the prisoner and swallowing the capsule he was taken ill. The cake, the sweets and the capsule were all three given him by the prisoner, and within a short time he showed the first symptoms described, viz., heartburn, which was followed rapidly by painful sensations and the contracting of the throat, retching, vomiting, agony, and raving to the time of death. On these facts the prosecution asked them to come to the conclusion that he not only died by aconitum, but by aconitum administered by the prisoner, it being clear that no other person had given anything to him during the prisoner's visit. The prosecution contended further that they had shown the prisoner to be possessed of aconitum, upon the evidence of two purchases of aconitum by him, one from the chemist at Ventnor on the 28th August, and the

The absence of these signs argues the non-administration of the particular poison.¹

The microscopic methods of discovering poison have been already discussed. It is not necessary to do more now than to call the practitioner's attention to them, as an important test.

§ 792. (b) *Chemical proof of the existence of poison in the stomach in sufficient quantities to have caused death, though important is not essential to conviction.*²—If the indictment charges poisoning, the administering of poison must be shown, either directly or inferentially. It is true that proof of the existence of poison in the body is an important item in such proof, but independently of the fact that such existence can be proved in other ways than by the absolute detection of the ingredient itself (*e. g.* by moribund appearances and peculiar pathological symptoms), the fact that poison was administered can be satisfactorily shown by proof of the potion being given, though there be no *post-mortem* examination at all. The case may be likened to that of a gunshot wound, received by a party on board ship, who is knocked overboard by the shock and whose body is lost. If the gun is found to have been levelled—if it is shown to have been loaded—if upon the discharge the party falls—it is not necessary to show the ball in his body, or even to prove the wound. It is true that the non-production of this species of proof can only be excused by necessity: but such necessity occasionally exists in death by poisoning, as well as death from gunshot wounds. When, therefore, a chemical analysis is unattainable, the rule is, that it is not indispensable to a conviction when there is satisfactory evidence of guilt *aliunde*.³ And this rule peculiarly applies where those charged with guilt are the agents by other about the 20th of November at Allen and Hanbury's, in Plough Court." Then again placing before the jury the two questions he had referred to in the opening of his charge, and warning them not to allow sympathy either for the poor boy or the prisoner to bias their decision, Sir Henry Hawkins left the case in their hands.

In less than than three-quarters of an hour the jury returned a verdict of "guilty." When called upon as usual to say why judgment should not be pronounced upon him, the prisoner, standing with arms folded, in a loud voice "protested his innocence before God," and with very few words the learned judge pronounced sentence of death.

¹ See vol. ii. of this edition.

² See *State v. Malley, supra*, § 703.

³ See as to nature and character of *post-mortem*, *supra*, chapters ii. and iii. of this volume, and also vol. ii. of this edition.

whom the prevention of a post-mortem was effected. Hitzig gives us an illustration of this in the case of a woman in Brussels, who, in order to cause the symptoms of the projected poison to create as little surprise as possible, gave out from time to time, beforehand, that her imbecile husband, who was the intended victim, was subject to "fits," of very much the same nature as those which she expected the poison to produce. Her object, as it afterwards appeared, was to produce in his family, who saw him but rarely, the impression that this case, when it occurred, was merely a repetition of former attacks; and she followed this up by the attempt to prevent a *post-mortem*. Of course, such efforts as these, instead of *protecting* the criminal, expose him to a new and more formidable class of suspicions; for there is no *item* in indicatory evidence in cases of poisoning so strong as that which arises from an attempt to obliterate the indicia of guilt.

§ 793. On the other hand, if it is in the power of the prosecution to produce before the court the opinion of experts as to the contents of the deceased's stomach, an omission to do this is a culpable neglect, which becomes the more mischievous from the fact that it is a general rule of law, that secondary evidence is inadmissible when primary can be obtained. And even if this strict rule does not apply to cases where, instead of an examination of the stomach, which could have been had, less positive tests are offered—and the tendency of authority is, that as a technical bar it does not—yet the defendant, who has been excluded from this opportunity by the exclusive control of the law, can with great force ask the jury to infer that had this final test been referred to, it would have demonstrated his innocence.

§ 794. "The moral evidence from the conduct of the accused," says Mr. Wills,¹ "his antipathies and other motives—his possession of the means of death, especially if unexplained by any circumstance to account for it upon an innocent hypothesis—his declarations—his falsehoods, subterfuges and evasions to prevent examination of the body, or to induce premature interment, and many other suspicious circumstances, constitute very material parts of the *res gestæ*, and furnish a clue to the explanation of facts which would otherwise be inexplicable. It is perfectly clear that by the law of England all such facts afford a competent and relevant evidence, from which can be inferred the criminal administration of poison."²

¹ Circumstantial Evidence 187.

² As to evidence from prior attempts. See Wh. Cr. Ev., § 37, 50. As to inference of malice, see *Ibid.*, § 794.

§ 795. (c) *Facts on which a verdict of guilty can be supported.*—Under this head we propose to touch merely the technical relations of this topic. Those bearing on medicine and surgery have been already fully discussed.

According to Mittermaier, in his monograph on the legal bearings of poisoning, two points must be established to sustain a conviction :—

a¹. That poison was administered to the person whose homicide is the subject of inquiry.

b¹. That death was the consequence of the poisoning.

Under the first of these heads it may be observed :—

a². The drug administered must be legally considered a poison.

b². It must be of such a character that after being taken it acts on the system as a poison. It should be observed that the term poison is relative, and that it is qualified by the means which the defendant used to administer it ; by the part of the body within which it is introduced ; by the method of administration ; by the quantity administered ; by the circumstances of the administration in reference to the time in which it is brought into the system ; and by the mixture of the poison with other drugs.¹

¹ The following is from Messrs. Browne and Stewart's Reports of Trials of Murder by Poisoning, already cited, pp. 49 *et seq.*

Trial of George Ball for poisoning his mother with prussic acid, July, 1860, Home Circuit, Lewes, before Coleridge, Chief Justice, of Common Pleas; Barrow, for the prosecution, Sergeant Ballantine, for the defence.

This case, really of misadventure, is reported briefly, as showing the carelessness with which dangerous medicines may, no doubt most unintentionally, be administered even by professional men, and the culpable ignorance in some of those chemists who deal in such deadly preparations.

The accused, a medical man, but not in regular practice, had for some time attended his mother, a very ailing old lady, and been in the habit of giving her small doses of prussic acid, as a remedy for violent attacks of vomiting, to which she was subject. On the 11th of July, in consequence, he purchased of a Mr. Moswell, a chemist in Lewes, a drachm of Scheele's prussic acid, equal to 60 "minims," and gave her a dose of 4 "minims." The result was favorable, and the old lady went for a walk. On her return, however, she again complained, and the accused administered another dose of prussic acid, evidently from its effects, a deadly quantity, as she hardly got to her bedroom before she became insensible, and died almost instantaneously. The accused believed he had given her only seven drops, the proper quantity to be given. That he gave her seven drops was not doubted, but that the size of drops differ under circumstances as much as the strength of Scheele's preparation of the acid, will be seen from the

§ 796. The proof of the administration of the poison falls under the following heads :—

following evidence. Mr. Serate, a surgeon at Lewes (who was sent for by the accused, found the lady dead and the accused apparently in a very distressed state of mind), said :—

" I asked what was the matter ; and the accused said he had given her seven drops of prussic acid, and the witness replied he must have given her more."

Chief Justice.—" Would seven drops be sufficient to cause death ?"

Witness.—" Not according to my experience ; it was the proper quantity given. The smallest quantity of prussic acid on record having caused death was of nine-tenths of a grain."

Chief Justice.—" How many ' minims' would a drop contain ?"

Witness.—" That would depend how the drops were obtained from the bottle. If the cork was partly in, the drop would be larger than if it was carefully poured from the open neck of the bottle. Some medical men made use of one method and some of the other, but it was his practice not to rely on ' drops,' but to measure ' minims.' "

To Mr. Barrow.—" With such a deadly poison as prussic acid I should say that it was not prudent for any medical man to rely on ' drops,' but to measure ' minims.' The proper doses, as marked on all bottles of Scheele's strength, to be administered were one, two or the largest three ' minims.' Scheele's acid was not uniform in strength ; sometimes it contained four, sometimes five, and sometimes as much as six per cent."

Chief Justice.—" Would not that amount to almost the difference between life and death ?"

Witness.—" It would make a very great difference, certainly. Taylor and other eminent medical men have recommended that Scheele's prussic acid should not be used, on account of the very great variation of strength. I myself always use that of the Pharmacopœia. But notwithstanding what has been written upon the subject by many eminent men, Scheele's acid is generally used in the profession."

Chief Justice.—" Supposing the acid to be of the highest strength you here mention, do you consider seven drops would have been sufficient to cause death ?"

Witness.—" I don't believe they would."

To Mr. Barrow.—" Six per cent. is an exceptional strength, but I should think it would take seventeen minims of that strength to cause death."

Chief Justice.—" What do you say is the difference between a ' drop' and a ' minim ' ? "

Witness.—" That would depend on the sort of ' drop.' The prisoner afterwards gave me a bottle which contained prussic acid. He told me he had given his mother four minims, and 2.5 minims remained. I did not test the strength of what remained, but had no doubt the deceased died from the effects of prussic acid."

To Sergeant Ballantine.—" There was a broken cork in the bottle when the

a¹. Report of the chemical examination.

b¹. Symptoms of the sickness.

accused gave it to me. In his opinion 'seventeen minims' was the smallest dose that would destroy life. It was very easy to destroy life when dropping the liquid from a bottle. When accused told him he had given seven drops, he understood that he had given three and a half minims. He had never heard of any instance in which the strength of Scheele's acid had exceeded six per cent."

Mr. C. H. Moswell (chemist in Lewes).—On the 11th of July accused came to his shop and asked for some prussic acid. Gave him a drachm, which would contain sixty minims. Did not measure it, but gave what he considered a quarter of the bottle."

Cross-examined by Sergeant Ballantine.—"As you say you really did not measure it, can you tell us how much prussic acid you really did give?"

Witness.—"I cannot say to a drop; I am sure he had fifty drops; I consider a 'drop' and a 'minim' synonymous. I gave him about the quantity; but when prussic acid is dispensed by a medical man, he is, of course, careful as to the quantity he uses."

Chief Justice.—"We have been told that a 'drop' contains two 'minims,' and this witness says he looks upon them as synonymous."

Sergeant Ballantine.—"If you were told to give a patient so many 'minims' should you give him so many drops?"

Witness.—"Certainly not."

Sergeant Ballantine.—"Can you tell us the strength of the prussic acid you sold?"

Witness.—"I don't know what the strength was; I should suppose about four per cent."

Case for the prosecution closed.

The Chief Justice called the attention of the jury to the evidence, and observed, that the fact of the cork being broken in the bottle, and defective, was certainly an important matter for their consideration, as it admitted the possibility that the prussic acid might have escaped from the bottle accidentally, and then there was an absence of evidence that an excessive dose had been administered by the accused.

The jury almost immediately returned a verdict of not guilty.

"If the estimate," say Messrs. Browne & Stewart, "of the witness Serate, is taken for the difference between a drop and a minim, and the second witness, Moswell, is correct in saying that he gave the accused at least fifty drops, equal to twenty-five minims, as only two-fifth minims were left in the bottle, equal to four and a quarter drops, in the two doses, the accused must have administered more than forty-five drops, equal to twenty-two and a-half minims. If the cork was not broken in the bottle when the first dose was administered, the probability is that the dose then given did not exceed seven drops of the size that would make them equal to three and a-half minims, thus leaving nineteen minims for the second dose. It is to be regretted that the strength of the prussic acid was not tested."

c¹. Appearances at death and on the corpse.

d¹. Physical observations.

e¹. Presumptions of the particular case.

a¹. *Report of the chemical examination.*—Formerly, chemical proof of the existence of poison was considered essential to conviction. But this, as has just been seen,¹ is based on two erroneous suppositions: 1st. That in all cases of poisoning, the poison may be discovered within the deceased, or in his evacuations; and, 2d. That the results of chemical analysis exclude all doubt. It is true that, when mineral poisons, *e. g.*, arsenic, are administered, they could be detected chemically. But the inadequacy of the presumption drawn from the non-discovery of poison is shown from the following points:—

a². Many poisons, particularly alkaloids, can only with great difficulty, and under the most favorable circumstances, be chemically detected when internally applied.

b². In other cases, where the poison is capable of chemical detection, the veracity of the rendering is destroyed by the rapid evacuations, *e. g.*, vomitings, that the poison induces; by the evaporation of the poison from the body after death in the shape of gas; by a protracted sickness after administering it, which produces absorption of the poison; by long delay after death, which destroys its traces; and by the eradication of counter agents.²

¹ See *supra*, §§ 776 *et seq.* See particularly the notes on this point in the preceding discussion of Poisons.

² In Sergeant Ballantine's "Experiences of a Barrister's Life" (London, 1881), we have the following:—

"I am about to tell a story, the circumstances of which will be thought improbable in a romance, and yet every word of it is true; and there are incidents which I believe to be connected with it that would add to its strangeness, but which I suppress, because I do not possess the proofs requisite for their authentication.

"What I shall relate will disclose a series of blunders, the danger of placing too great reliance upon scientific testimony, and the want of a tribunal capable of revising decisions alleged to have been erroneous in criminal cases.

"The unfortunate victim was a lady who, at the date of my narrative, might still be entitled to be called young, and certainly was of that opinion herself. She was a member of a highly respectable family, and possessed of some £2000*l.* entirely at her own disposal, and had some further expectancies. She was not fond of the trammels of home life, and, preferring to reside at a boarding-house, she selected the establishment of a respectable lady at Bayswater, where also resided a medical man and his wife, the former about fifty years old, the

§ 797. b¹. *The symptoms of sickness.*—The disturbing influence of poison on the human frame produces certain signs, which are the pecu-

latter twenty years older. An intimacy sprung up between the doctor and the lodger (whom we will call Miss Hills), of which the mistress of the house did not approve, and gave Miss Hills notice to leave, which she did upon November 29th in the above year. The doctor also left upon December 12th following, and was married the same day to Miss Hills at Battersea Church. Oddly enough, no surprise was expressed by the doctor's wife, and her position in the affair is very difficult to be understood ; it will certainly be made apparent by the course of events that she was in communication with her husband and upon apparently affectionate terms. Nothing more is known with certainty of the doctor and Miss Hills until February 4th, when they took apartments in one of the suburbs, where they remained until April 15th, living as man and wife, and upon leaving went to another residence in the neighborhood. It is to be remarked that from the time of their removal in February, Miss Hills was apparently suffering from illness, and one of the best known medical men in the neighborhood was called in to see her. It must be borne in mind, in reference to statements subsequently relied upon by the prisoner, that no suggestion was then made by him that she was pregnant, but he stated that she was suffering from a bilious attack. It would not, however, assist the general reader or help to develop the story to give any details of the symptoms then exhibited.

"Suffice it to say that the local practitioner found, to his greatest astonishment, that none of his remedies produced the slightest effect, and he felt confident that some agent was at work to counteract them. Naturally he was very loth to express such an opinion, and he continued to watch the case with great anxiety ; and, without mentioning his suspicions to his partner, requested that gentleman to take charge of the patient for two or three days, which accordingly he did. At the end of that time he also was impressed with the same conviction, and declared his positive opinion that the lady was being placed under the influence of poison, thus fully supporting the view previously arrived at by his partner.

"Toward the latter end of April, the sister of Miss Hills was for the first time communicated with, and she at once came. Her evidence does not throw any light upon the case, except that she deposed that her sister's health was generally good, and that, although she occasionally suffered from bilious attacks, they succumbed readily to simple treatment. Her appearance at this time was so alarming that, at the sister's suggestion, another medical man was sent for, and one of the most eminent physicians of the day attended and saw her on the last day of April. No communication was made to this gentleman of the suspicions entertained, but the first words he uttered after his examination were : 'That lady is being poisoned !'

"A portion of arsenic was discovered in some vomit that was analyzed by the well-known chemist, Professor Taylor ; and this, joined to the absolute conviction of all three medical men, induced one of them to apply for a warrant, and the pseudo-husband was arrested upon it. He was, however, by an utterly

liar accompaniments of this action. Great prudence, however, is requisite in the use of this kind of evidence, on account of the diffi-

unaccountable blunder, released, the magistrates accepting his statement that his absence would kill his wife, and allowing him access to his apartment without supervision. His release, however, did not prevent the fatal result, for on the following day, May 3d, the unfortunate lady died in great suffering. A *post-mortem* examination was held upon her body, and both arsenic and antimony were discovered in different parts of the intestines. It was proved by the landlady of the house in which she died that the supposed husband alone waited upon her, declining upon the ground of poverty (for which there was no foundation) to employ a nurse, and that no portions of the food sent up to their rooms were ever returned. In giving an account of the illness and death of this poor woman, I have avoided details of a technical character as much as possible, but I think I have said enough to make my views intelligible; and I have now to call attention to certain facts that must be taken in conjunction with the medical evidence to enable the reader to form a sound conclusion upon the case.

"On Saturday, the 12th of April, the accused man called upon a solicitor, and requested him to call the next day for the purpose of drawing out a will, at the same time showing him the draft of one which he said a barrister had prepared. The solicitor objected to doing so on Sunday, but, being told that the lady was ill, consented, if sent for, to come. His visitor called again the next morning, and brought him to where he and Miss Hills were residing. The lawyer wished that a medical man should be present, but this was declined. The draft that he had seen before was produced; and a will was drawn up founded upon it, which left everything to the accused, and Miss Hills executed it, signing her maiden name.

"It was proved at the trial that in a box belonging to the prisoner were found subsequently many forms of wills, and also a letter, which for some reason had not been forwarded, directed to his wife, and which appeared to me one of the most significant incidents in the case. The letter was dated May 2d, and contained an intimation that he (the prisoner) had been prevented by circumstances from leaving for town so soon as he expected in consequence of his professional assistance being required by a patient on whom he was attending, and that, *if anything unforeseen prevented him from leaving before the eleventh*, money should be sent to her for certain purposes, and concluded with the expression of a hope that he might find her quite well on his return, which he trusted would not long be delayed.

"I have already stated that Miss Hills died upon May 3d, and the supposed widower, who in the meantime had unrestricted access to his room, being again taken into custody, was examined before a bench of magistrates, and finally committed to take his trial for murder at the Central Criminal Court, and in due course he came before the Lord Chief Baron Pollock. It so happened that upon the second day of the trial a juryman was taken ill, the jury were consequently discharged, and the case was adjourned to a subsequent

culty in securing certainty in the witnesses ; of the fact that other sicknesses may have produced these symptoms ; of the difficulty in

session, when the same judge presided. I conducted the prosecution, and the facts as I have related them, but in greater detail, were proved. Mr. Sergeant Parry, with whom was Mr. Giffard, defended, and two abler men could not have been selected. Medical practitioners were called by them to prove that the appearances detailed were consistent with natural causes ; and one gentleman who had figured for the same purpose upon the Palmer trial, started a theory to support this opinion.

" The Lord Chief Baron pointed out that it was not from isolated symptoms that a conclusion could be formed, but by the aggregate of all of them joined to the independent facts of the case—the same doctrine in fact as that enforced by Lord Campbell upon the trial of Palmer—and the jury, as it appeared to me at the time, and I still think, came to the right and almost inevitable conclusion of the prisoner's guilt. A great outcry, however, subsequently arose, a medical war was waged with great vigor in the newspapers, and petitions were forwarded to the Secretary of State. Two documents also were produced ; one a letter to Miss Hills's sister, and another an entry by the prisoner in a diary. The fact was suppressed that copies of both were in the hands of the prisoner at the time of the trial, and that I had offered to put them in evidence if it was desired on his behalf, and the Secretary of State was probably drawn into the conclusion that they had been kept back against his wishes.

" Ultimately the matter was referred to Sir Benjamin Brodie to report upon, and he obviously could only deal with it in its purely medical phase, and without the light thrown upon it by the other evidence. Of course no one on the part of the prosecution could interfere. The Home Secretary ultimately released the prisoner, who afterward proved the will of Miss Hills and thus secured possession of her property. (After the pardon for the murder he was tried, convicted and imprisoned for twelve months for bigamy.)

" When the following facts are brought to the attention of the reader, this result can easily be understood :

" It will be remembered that on the day before the death of Miss Hills, the accused man was given into custody, but released. Whether this could have been under any circumstances prudent, it is abundantly clear that either everything that could throw light upon the subject ought to have been taken possession of beforehand, or some watch placed upon the supposed husband ; but neither was done. He obtained access to his room, and I have very little doubt that he laid a trap, into which Dr. Taylor innocently fell. After the death, everything that the prisoner had allowed to remain was secured, when it was noticed that the medicines supplied by the local practitioners were nearly untouched, and there was nothing to excite suspicion but one bottle filled with colorless liquid. This was immediately pounced upon ; it was known that arsenic had already been discovered, and so Prof. Taylor set to work upon a portion of the liquid with the usual test for the discovery of that poison. This is called Reinsch's test, and consists in mixing a small quantity of hydrochloric acid

getting at the prior health of the patient; and of the inability of the physician to form an opinion without a survey of *all* the facts, which in many cases is impossible.¹

with the liquid to be tested, and then dropping into it a piece of copper gauze, to which, if there be any arsenic in the mixture, it is supposed to attach itself. Accordingly this was done with a portion of the liquid in question, but, instead of the gauze attracting anything it became itself dissolved. Another piece of gauze, and then a third met with the same fate; at last traces of arsenic did attach themselves to a piece of the wire which had not dissolved, and when before the magistrates the Professor, without explaining the difficulty that he had encountered, simply stated that upon analysis he had discovered arsenic. The remaining portion of the contents of the bottle was preserved,¹ (I well remember that upon the inquest the person suspected showed great anxiety that this should be done), and being subjected to a different test, turned out to contain no arsenic whatever, but was a bottle composed of chlorate of potash, and Professor Taylor ultimately found out that the arsenic he had discovered after so many trials had actually emanated from his own copper gauze, which had been dissolved in the early experiments.

"Although really the arsenic and antimony that had undoubtedly been discovered in the body rendered it immaterial whether any was contained in this particular bottle, there can be no doubt that so terrible an oversight on the part of a man of great eminence was calculated to affect public opinion, and lead it to cast discredit upon the whole of the scientific testimony produced, and I have now to relate an incident in connection with it which will, I think, throw some light upon the origin of this most serious mistake.

"A physician now of great eminence, who was present when the vomit was analyzed, and who gave evidence upon the subject of dysentery, of which he had obtained much experience in the Crimean campaign, forwarded to the solicitor who was conducting the prosecution a number of the '*Lancet*', containing a letter from the prisoner, written some seven or eight years before, upon the extraction of teeth, and in this number, and upon the opposite page to that which contained his letter, was one of a series of lectures by an eminent chemist on the detection of arsenic, in which it was stated that wherever chlorates were used Reinsch's test would invariably be defeated. It was probably perfectly known to the prisoner that this test had been usually applied by Dr. Taylor, and I have never been able to make up my mind whether there was really any poison in the bottle, or whether it was a contrivance which had been arranged for the purpose during the interval between the prisoner's first and second apprehensions, with a view to the result that occurred; but, whatever was the intention, it undoubtedly saved his life.

"It is due to the memory of Dr. Taylor to state that a doubt crossing his own mind led to the discovery of the mistake which was disclosed upon the trial, and did not really affect the weight of the evidence, or apparently the minds of the

¹ See *ante*, §§ 326–42.

§ 798. *c¹.* *The appearances at death and on the corpse.*—In the great majority of poisons there is a danger of deception arising from

jury, it being shown that it would not affect the analysis of the vomit and intestines. It may not be altogether satisfactory to mankind to mention that Dr. Taylor wrote to several of the most eminent chemists to obtain specimens of the gauze used by them in their experiments, and that it was in every instance found impregnated in the same way. The difficulty that presents itself to my thoughts is, why the presence of the chlorates was not ascertained before the test was applied.

"It is a pregnant example, however, of what I have been so anxious to enforce—that the speculations of scientific men, however eminent, ought never to be made the basis of a case. They may and constantly do materially assist it. In the instances of Palmer and many others they were so far auxiliary to the other evidence that they showed it to be perfectly consistent with the natural conclusion that the facts themselves had presented to all reasoning minds.

"The solicitor of the deceased was indefatigable in his exertions in the conduct of this case. His sympathies and indignation were both roused, and it occurred to him, in looking at the letter of the prisoner in the 'Lancet,' to see where it was dated from, and he found that it was dated from a street in the West End, where the prisoner was living with his wife, and practicing as a doctor. His brother carried on business as a chemist in an adjacent street. They both left somewhat suddenly, after an event upon which the subsequent history throws a somewhat ghastly light.

"A gentleman named G——, thirty-three years old, accompanied by his wife, a young lady possessing some attractions, came to lodge at the brother's house, and shortly afterward was taken ill; he was attended only by the prisoner, the drugs being supplied by his brother. None of the invalid's family saw him, and some of them were refused admittance. He died, and shortly after both brothers disappeared from the neighborhood, as also did the widow. The certificate of his death described it as resulting from disease of the kidneys. No medical man's name is attached. The application of arsenic would produce symptoms that might be mistaken for this disease. No investigation seems to have taken place, and nothing was heard of the poor fellow's wife until the period between the two trials of the prisoner, when the solicitor received an extraordinary communication through an equally curious channel. A lady sitting in the gallery during the first trial made some remark to a neighbor favorable to the prisoner, when that person said, 'Oh, he is guilty; he is one of a gang of poisoners.' The lady asked what she meant, and received a statement and also the person's name and address, which she communicated, and an officer was sent to make inquiries.

"She turned out to be the widow of a sergeant and quartermaster in the army, and she furnished a long statement, which it is not necessary for me to set out *in extenso*. The important part of it was, that she was residing with her husband in a house at Brompton, that the prisoner's brother was living next door, that the prisoner was constantly there, and that a lady calling her

the fact that many changes in the corpse are misunderstood, while other signs, such as inflammation in the stomach, are the consequences of other diseases. The difficulty in such cases is aggravated by delay in dissection, by which the organs become putrid.

d^l. Among *physical* peculiarities may be mentioned a particular color of the affected parts; or a specific odor or taste; the finding in the stomach seeds of berries, which were taken as poison; the illumination of poisoned food, as in the case of phosphorus, or the smell of bitter almonds, as in the case of prussic acid.

self Mrs. G—— was living in the same house. The witness stated that, about three years before, this lady had come into her house in a highly excited state, and said that the prisoner had been trying to force her to make a will in his favor, and made further statements indicating a belief that she should be poisoned if she did.

"The witness saw Mrs. G—— upon other occasions; once the servant fetched her when she was in a fit, and a doctor was also present. The patient made statements about the prisoner that showed she was in great apprehension as to the food she was taking. Mrs. G—— appeared to be about forty years of age.

"On the 9th of December preceding the marriage the same witness saw the prisoner with another lady, who, from the description, was probably Miss Hills. The foregoing statement was made to Sergeant MacIntyre, a police constable, and, whether the conclusions of the witness were correct or not, there seems but little doubt that Mrs. G—— must have been the widow of the prisoner's former patient.

"I think also that it will be admitted that if the circumstances I have related be substantially correct, they show that through a variety of unfortunate causes the case must be regarded as exhibiting a most lamentable result.

"I have already mentioned that a strong contest went on in the press upon the result of the trial, and representations, some of which were certainly untrue, were made to the Home Secretary. The facts were of such a peculiar character that the whole of them should be taken together to enable a sound conclusion to be arrived at. It is simply impossible that this can be done without ordinary legal machinery. Every lawyer knows that in civil cases a rule for a new trial is constantly granted until light is thrown upon the facts by those opposing it. In criminal cases no power exists for such a purpose. The scheme of a Court of Appeal frightens our Legislature, but justice demands it, and I believe that it might be effected with both ease and benefit. I was well acquainted with the leading physician in the case, who was certainly one of the foremost men in his profession. He never swerved for a moment in his conviction that the unfortunate woman was poisoned; and I fancy that he agreed with Brodie and other eminent medical men that an experienced eye witnessing a death-bed can scarcely be mistaken as to the signs presented if poison has been administered." See for a detailed report, Brown & Stewart's Poisoning Cases, pp. 448 *et seq.*

e⁴. The combination of facts showing *preparation* or *motive*. Thus in a preliminary inquiry we may look for the offender among those who obtained the materials appropriate for the commission of the offence, or who would be benefited by the death of the deceased.

§ 799. The guilt of the defendant may be considered established notwithstanding—

1. That if proper means had been used death might have been averted.¹

2. That a peculiar constitutional susceptibility increased the liability to death.²

3. Mismanagement on the part of medical attendants, by which the symptoms were aggravated, if, in point of fact, the poison was lethal.

On the other hand, as is correctly stated by Mittermaier, the offence will not be complete when the poison is administered in such a small quantity, or in such admixtures, as to destroy its deadly qualities, or when the death is to be traced to an entirely independent cause. In the latter case, however, the crime is consummated if it appear that the death was accelerated by the poison.³

§ 800. (*d*) *Duties of counsel for prosecution and defence.*—In America and England, the counsel for the prosecution is limited, in his opening, to a statement (1) of the facts showing the *corpus delicti*, and the defendant's connection with it; and (2) of the law of the land bearing on the particular issue. It is not only unbecoming, but illegal, to refer to the defendant's character and antecedents as acting on the issue in any other way than as affording a presumption of innocence.⁴ At the same time, if the defendant sets up accident and ignorance in the use of poison as a defence, the prosecution may rebut this by showing prior attempts at poisoning by the same methods.⁵

In collecting and developing the evidence of the medical and scientific witnesses, however, the prosecuting officer's task is far more difficult. He must first take care that the witnesses so called by him should be of unquestioned skill and standing in their respective branches of study. In the preliminary hearings it is best for him to give full scope to the investigation, calling even such experts as may

¹ Wh. C. L., § 941.

² Ibid.

³ Ibid.

⁴ Wh. Pl. and Pr., 8th ed., § 558.

⁵ Wh. Cr. Ev., §§ 23 *et seq.*

be suggested by the defence, so as to produce greater fairness, to form a wider base for induction, and to avoid surprise on trial. It is peculiarly important for him to familiarize himself not merely with the law in reference to the crime, but with that portion of the science of medicine with which the particular case comes in contact. Not merely does he have to address the jury on these topics, but he must so master them as to be able to direct his own witnesses, and sift those called on the opposite side.

§ 801. The counsel for the defence, in preparing his case, will first turn his attention to collecting information as to the prior state of the deceased's health, so as to explain on natural grounds, if possible, the symptoms of the alleged poisoning. He will particularly examine the medical testimony at the preliminary hearing, seeking to contradict it when in error, and at all events, by bringing out all legitimate conflicting opinions, enable the question to be thoroughly canvassed.

On the trial, in addition to those duties in the examination and cross-examination of witnesses which he shares with the prosecuting officer, it lies upon him to require that public justice, as well as justice to his client, should be furthered by satisfactory proof on the following points:—

The integrity, impartiality, experience, and skill of the experts, on whose testimony the case of the prosecution hangs.

The careful preservation of the parts or substances which were the subject of chemical or other analysis, and the adoption of due precautions to prevent an erroneous result.

The connection of the fatal disease with the poisoning.

The practicability of the method of poisoning alleged.

The connection of the defendant with the administration of the poison.

2d. WOUNDS AND BLOWS.

§ 802. a. *Legal definition of wounds.*—Under the English statutes making "wounding" indictable, a breaking of the continuity of the skin is essential to the legal offence. Thus it has been decided that it is not enough "to show a separation of the cuticle only," and hence, where a medical man said that there was a slight abrasion of the skin, from which blood would issue, but in a different manner if the whole skin were cut, the King's Bench held that there was no

wound.¹ So a scratch, even though death ensue through inflammation, is no wound.² Where, however, there is an internal breaking of the skin, as where the lower jaw is broken in two places, and there was an internal bleeding, this was held a wound.³

§ 803. The mere breaking of bones, however,⁴ or their dislocation,⁵ is not wounding under the statutes assigning specific penalties to "woundings."

The wound must be effected by an instrument, and hence biting a nose or a finger is not wounding;⁶ and it is clear that throwing sulphuric acid on the face is not.⁷ It is otherwise, however, with a blow from, or a kick with, a shoe.⁸

§ 804. It should be observed that questions of this kind cannot arise in indictments for homicide, unless it be in cases where the indictment is so inartificially drawn as to present but the single alternative of "wound." And even then it is not clear but that the term would be sufficiently comprehensive, in the way that it is ordinarily used ("giving unto the deceased one mortal wound, etc.), to cover cases of biting.⁹ In other cases, where there is no breaking of the skin, the word "bruise" should be used. But even this would seem not to be now necessary. In an English case tried before Mr. Baron Alderson in 1846, the indictment charged that the defendant "with a certain instrument called a swingle, made of wood, iron and leather * * * did then and there give unto her the said E. W. one *mortal* wound of the length of one inch, and the depth of half an inch, of which said mortal wound the said E. W. then and there instantly died." The surgeon who took the post-mortem stated on his examination as follows: "I found, on examining the head, no external breach of the skin. I found a collection of blood on the back part of the head. The deceased died from extravasation of blood, which pressed on the brain. On examining and cutting the scalp, I found a collection of

¹ R. v. McLaughlin, 8 C. & P. 635.

² R. v. Beckett, 1 M. & Rob. 526; Moriarty v. Brooke, 6 C. & P. 684.

³ R. v. Smith, 8 C. & P. 173. As to variance in respect to wounds, see Wh. Cr. Ev., § 92. As to meaning of word "wounds," see Wh. Cr. L., 8th ed., §§ 532-3.

⁴ R. v. Wood, 1 R. & M., C. C. R. 381.

⁵ Anonymous, cited Elwell on Malpractice 316.

⁶ R. v. Stevens, R. & M., C. C. R. 409; R. v. Harris, 7 C. & P. 456.

⁷ R. v. Murrow, R. & M., C. R. 456; Henshell's case, 2 Lewin C. C. 135.

⁸ R. v. Briggs, M. C. C. 318. See Wh. Cr. L., 8th ed., § 533.

⁹ See Wh. Prec. 114.

blood between the scalp and the cranium, just above the spot where, within the cranium, I found the pressure on the brain. I called that a contused wound, with effusion of blood; that is the same thing as a bruise. The internal part of the skin was broken. Medically we call the breaking of the skin, whether externally or internally, a wound." The defendant was convicted, the learned baron holding it was unimportant whether the injuries were external or internal, and the conviction was sustained by the fifteen judges.¹

b. Under what circumstances wounds imply criminal agency.

§ 805. *a¹. Character of the wounds themselves.—a². Adaptation to a particular instrument.*—In Cunningham's case, the effort was to show the similarity of a bruise on the deceased's person with a blunt instrument in the defendant's possession; in Webster's (though erroneously, as it turned out), to connect the mortal blow with a sledge-hammer; in Boynton's, to establish a connection between the orifice of the wound and the bore of the defendant's pistol. So convictions have been had from the peculiar jagged character of the wound indicating a saw, from the delicacy of a puncture indicating a needle, from the heaviness and breadth of a bruise, the flat side of a spade. When the weapon is found bloody or covered with hair, this strengthens the chain.

The character of the wound may indicate that the charge was by gunpowder alone, fired at a very short distance,² or by very small shot,³ or by rifle shot.⁴ So also the *distance* of the murderer may be thus inferred.⁵

¹ *R. v. Warman*, 2 C. & R. 195; see Wh. Cr. L., 8th ed., §§ 519, 523, 533.

² On this topic, see fully Wh. Cr. Ev., §§ 265 *et seq.*

³ See *supra*, §§ 265 *et seq.* ⁴ See *supra*, §§ 270 *et seq.*; §§ 776 *et seq.*

⁵ *Ibid.* Among the many questions which arise under this head are:—

1. Could the injury have been really produced by the weapon which is supposed to have been used?

The following facts will be of service in answering this question:—

a. Blunt instruments produce their effect partly by pressure, and occasion crushing, tearing, and breaking of the parts struck, according to the greater or less force of the blow and of the resistance offered. A smooth and blunt instrument may be recognised by the suggillation and swelling which will follow upon the blow. Cornered, rough, blunt instruments produce, besides the crushing, holes and often torn and cracked places. Blunt instruments with smooth broad sides often produce deep-seated internal injuries of which no trace is seen upon the surface of the body. See *supra*, §§ 265 *et seq.*; §§ 776 *et seq.*

Wounds caused by these instruments have, generally, broken, irregular edges, bleed comparatively little, and fester in healing.

The general presumptions to be drawn from the instrument of death are elsewhere noticed.¹

b. Sharp instruments.—Where the wound was produced by stabbing, its size and depth must be compared with that of the instrument. Where the wound is by a blow or cut, its edges will often show mutilations answering to gaps or defects in the instrument. A round and conical instrument produces wounds similar to those which a table-knife would occasion. The form of the instrument may often be recognised from the shape of the wound.

c. Shooting instruments.—If the weapon be heavily loaded with powder, which is confined with a paper-wad, and be fired at the distance of one or two inches from the body, it will bore a hole similar to that produced by a ball, and leave no traces of paper in the opening. If the weapon be heavily loaded with small shot and fired at a distance of from one to twelve inches, it will produce one single wound at the surface, while the shot will afterwards separate and take different directions within the body. At a distance of one and a half feet there will be separate wounds on the surface. At a distance of three feet the shot will all enter separately, but may be included within a diameter of three or four inches. This diameter increases in proportion to the distance, so that at fifteen steps the load will scatter over the whole back. If a weapon loaded merely with powder be fired at a distance of five or six inches from the body, the paper-wad, together with grains of powder, may form a wound very similar to that produced by small shot when fired in close contact with the body. If the weapon is fired at a less distance, but owing to the small charge the contents do not penetrate the skin, the surface from one and a half to two inches in circumference will be uniformly burned, while small black specks, produced by single grains of powder, will be found at further intervals. Where the weapon is fired at a distance of four feet, this burned place will not be seen, and the grains of powder will scatter over a surface of six inches in diameter. Balls often pursue a very inexplicable course in the body. When the ball is found and its shape has not been injured, it should be compared with the weapon used; if the shape has been destroyed, its weight may be compared with that of a similar ball which has not been injured.

The wound made by the egress of a ball from the body is either similar to that made at the entrance, or smaller. In the majority of cases no contents of the body will be forced out at this opening, but the skin will be torn and exhibit a wound of different shapes, sometimes like a split, sometimes three cornered, etc.

Pure shot-wounds.—These resemble a wound made by a round cutting instrument, and are alike at the ingress and egress of the ball. Such wounds will only be found where the weapon has been fired at a distance of from ten to sixty or eighty steps from the body. Nearer than this shreds of paper and grains of powder will accompany the shot. But not all shots made within this distance produce such wounds; there may be some defect in the weapon, or

¹ *Supra*, §§ 265 *et seq.*; *infra*, §§ 834 *et seq.*; see also, Wh. Cr. Ev., §§ 765-7 *et seq.*, where the presumptions to be drawn from weapons are fully noticed.

§ 806. The physician, as Dr. Casper reminds us,¹ is often called to answer the question whether the injuries found upon the body could some peculiar condition of the tissues through which the ball must penetrate, or its force may be diminished by striking against a bone, and so the wound resemble ordinary shot-wounds.

If the ball splinters a bone and carries pieces out with it, or if it enters the body obliquely, the wound made by its egress may, in such cases, be absolutely larger than that made by its entrance into the body.

For how long a time are the marks given above for distinguishing between the wound made by the entrance and that made by the egress of the ball visible? The edges of the skin, standing out in the one case, and pressing in in the other, lose this peculiarity after a few hours. In other respects the condition of the wound remains unchanged until festering begins to take place.

The scar left in healing often indicates the direction of the ball as surely as the fresh wound. The scar formed at the place where the ball entered is circular and concave; the skin is drawn in creases from the circumference to the centre; and the scar is white and hard. The scar which forms over the wound made by the egress of the body is, generally, smaller, and of irregular shapes, and often scarcely visible, while the other scar remains distinctly marked.

Contusion, with ecchymosis and extravasation about the wound, are indications of a nearly spent ball. The less the force of the ball the greater injuries of this sort will it produce. The following is an average of the distances within which the several varieties of shot-wounds may be found:

- (1) Pure shot-wounds at a distance of from ten to eighty steps.
- (2) Ordinary shot-wounds at a distance of from fifty to five hundred steps.
- (3) Contusion and extravasation at a distance of from fifty to five hundred steps and more.

The hole made by the ball answers to its circumference.

In pure shot-wounds this hole is just the size of the ball.

In ordinary shot-wounds the diameter of the hole is never greater, and seldom any less than the circumference of the projectile. In case the outer skin is torn away, the wound at the entrance and egress of the ball may be somewhat larger than the ball would seem to require.

Where the ball strikes obliquely, the opening made is not round, but oval, and gives no data for determining the size of the ball.

2. Can any conclusion be drawn from the extent and position of the wound as to the bodily strength of the person who inflicted it?

The instrument used as well as the injury must be looked to in answering this question. It requires, generally, only sufficient strength to wield a heavy blunt instrument in order to produce with it serious injuries, while greater strength is necessary to effect the same with lighter instruments. Sharp instruments require less strength in proportion to the keenness of their edge.

3. The question whether any conclusion can be drawn from the position and

¹ Gericht. Med., ed. 1857, § 40 *et seq.*

have been inflicted with some specified instrument. This is generally easy to answer, as, for instance, where the skull is broken, it might extent of the wound as to the manner in which it was inflicted, can only be answered in special cases.

The easiest way of testing whether a given instrument produced the injury is to place it in the wound, but this is commonly to be avoided as apt to change the original appearance and size of the wound.

The question whether a given instrument is a dangerous one or not belongs not to the province of the physician, and depends altogether upon circumstances.

See Böcker's Med. Jur. 1857, from which the above is translated and reduced, and see fully *ante*, § 707 *et seq.*

In *Com. v. Twitchell*, 1 Brewst. 566, Dr. Gross, an eminent surgeon, was called to prove that the deceased could not have been killed by a poker produced on the trial.

The defendant offered to show "that the poker offered in evidence by the Commonwealth could not inflict the wounds on Mrs. Hill's skull; that the witness had read the reports of the testimony of Dr. Shapleigh, and that in his opinion this poker could not inflict those wounds."

This was objected to, and argued.

Brewster, J.—"The offer of the defendant to show that, in the opinion of this witness, the poker could not have produced the wound, should be admitted. His experiments with another poker on another skull should be excluded."

Ludlow, J.—"I concur. In *Champ v. Commonwealth*, 2 Metc. (Ky.) 27, the Court of Appeals said: 'It is agreed on all hands that such opinions, to be admissible, must always be predicated upon and relate to the facts established by the proofs in the case. Mere professional opinions upon abstract questions of science, having no proper relation to the facts upon which the jury are to pass, evidently tend to lead their minds away from the true and real points of inquiry, and should therefore always be excluded.'"

Subsequently the following question was put to the witness: "Have you been experimenting with a similar poker upon a human skull? If so, state the result of the experiment." This was objected to. The objection was sustained. The defendant excepted. The following opinion was given by the court (Brewster, J.), in overruling the exceptions:—

"The 20th and 21st reasons assign as error the rejection of 'an opinion' of a medical expert 'based upon experiments recently made,' 'and the result of said experiments.' If a jury can be bewildered by such confusions of science, we might as well abolish the form of jury trial. A woman is found murdered. Near her body lies a poker stained with blood, and adhering to it is a human hair corresponding in color to the hair of the deceased, and shreds of wool. A respectable physician describes her wounds, and says, in substance, that one of the fractures and a number of the cuts could have been caused by the poker. Now when an accused person offers to show that the stains are not blood—that the hair is not human, or not from the head of the deceased; that the shreds are

have been done with almost any heavy weapon. The further question, whether the injury was probably inflicted with the specific

not wool or not from her cap—or that, in the opinion of medical experts, the instrument found would not cause those wounds, he follows directly in the line of the Commonwealth's evidence. This prisoner chose only to pursue the last line of defence. The others, however, were all open to him. But he wished to go further: to do what never has been permitted before in the face of an objection. He proposed to show that some other arm than the defendant's could not with some other poker than that in evidence inflict such wounds upon some other skull. Of what avail was all this? The weapons, arm, and skull were confessedly different. The experiment must have been made on the skull of a corpse. These blows were inflicted upon the head of a living person. The expert must have handled a poker with the view to experiment. The guilty actor in this scene had a motive which might give far greater power to his blow than any force that could be invoked by mere philosophy teaching by example.

"But aside from all these refinements, the offer contradicted nothing. A physician, in one of our criminal trials, swore that the defendant's knife could not produce the wound found upon the throat of the deceased. During the recess, the then district-attorney, now of counsel for the accused, directed another surgeon to make the experiment; and the last expert was able to contradict the first by swearing that the weapon had in his hands actually made a still greater wound, and had decapitated a corpse. In *Commonwealth v. Geisenberger* (*Oyer and Terminer*, Philadelphia, Dec. term, 1858, No. 679), a very respectable physician swore that the blow from the defendant's fist could not have broken the skull of the deceased. A piece of the bone was, however, produced, and it was almost as thin as tissue-paper. Dr. Parkman's skull was fractured with a grape-vine stick. *Bemis's Rep.* 566.

"In *Champ v. Com.* 2 *Metc. (Ky.) Rep.* 27, cited by Judge Ludlow upon the trial, Judge Duvall, delivering the opinion of the Court of Appeals, said: 'It is agreed on all hands that such opinions (of experts), to be admissible, must always be predicated upon and relate to the facts established by the proofs in the case. Mere professional opinions upon abstract questions of science, having no proper relation to the facts upon which the jury are to pass, evidently tend to lead their minds away from the true and real points of inquiry, and should therefore be excluded.'

"There is, therefore, nothing in this reason which entitles it to consideration as a question of law. As matter of fact, the defendant cannot stand upon it, for his witness stated that he did 'not think any poker of this material could have inflicted the wounds, because it is not misshapen sufficiently; it could not have been used four times without bending.' * * * It is possible to break the temporal bone with the angle of this poker, and to drive the tongue through the fractured skull. There is authority for the assertion that a penetrating wound can be made by a poker. A repetition of the blows would break the bones more.' Dr. Maury stated that he thought 'it extremely doubtful that

instrument, cannot, commonly, be so positively answered. The most that can be said ordinarily is, that the wound might have been inflicted with the instrument in question, and that either it or some similar one was probably employed. A more positive answer in the negative can generally be given, as the cases where the wound could not have been caused by the specified instrument admit of little doubt. Much often depends upon this answer in questions of guilt and innocence.

A more difficult question is, whether any conclusion can be drawn from the position and extent of the injury as to the manner in which it was inflicted—whether the victim was lying, standing, etc., and as to the bodily strength employed in producing it. A close inspection of the position of the wounds, their depth, breadth, number and correspondence with the specified instrument, will often furnish strong evidence against the evasive statements of the accused.¹

the wounds could have been inflicted with this instrument, and we see it as it is. * * * It is possible to make a punctured fracture at the temple with that poker; it would be possible to make a lacerated wound with the poker; undoubtedly the whole skull could have been beaten into small pieces with that poker; it depends on the velocity of each blow, and the rapidity with which they are repeated; the temporal bone could have been broken with the heel of the poker, and then the tongue drawn in; have known a skull to be fractured with an umbrella; it was drawn into the skull above the eye.” The ruling in this case, it must be remembered, was virtually sustained by the Supreme Court of the state, that court refusing to grant an *allocatur* for a review.

¹ In Sergeant Ballantine's “Experiences of a Barrister,” (ch. xxvii.), we have the following:—

“ During the year 1864 a trial took place at the Central Criminal Court which presents features worthy for more reasons than one to be recorded. In the first place, the life of a perfectly innocent man was placed in jeopardy, and in the next the course pursued by the police deserves attention and calls for remark.

“ It appeared that upon the 26th of December in the previous year a serious disturbance had taken place in a public-house situated on Saffron Hill, Clerkenwell. This locality was at the time inhabited by the humbler class of Italians, and a squabble arose between them and some Englishmen in the neighborhood, resulting in the death of a man named Harrington, who was mortally wounded, and in serious injury to another man of the name of Rebbeck.

“ In both cases the injuries inflicted were by some sharp instrument, and in all probability by the same one. An Italian named Pellizzioni was found lying upon the body of the deceased man, and was then seized by the police, who naturally inferred that he was the perpetrator of the acts. He, however, declared that he had only come in after they were committed, was endeavoring to quell the disturbance, and in the scuffle still going on was thrown upon the body of

§ 807. *b².* *Shape and direction.*—Whether the wound was skilfully inflicted, or done roughly and brutally, may indicate (1) the skill,

Harrington, who was not quite dead. No weapon of any kind was found near the spot. After some examinations at the police court Fellizzoni was committed for trial, and tried before Mr. Baron Martin upon the charge of wilful murder.

"This learned judge had been a very successful advocate upon the Northern Circuit, where, however, he had not had any experience in the criminal courts, and although essentially humane and kind-hearted, was hasty in forming opinions, and slow in changing them ; and it was obvious that very early in the case he took a strong view against the prisoner, and summing up in accordance with it, a verdict of guilty was pronounced. Sentence of death was passed, the judge stating in the course of it that 'he had never known more direct or conclusive evidence in any case.' It would serve no useful purpose to discuss the testimony given by the various witnesses called, and I shall dismiss the question with this remark—that it was extremely conflicting, and there must have existed upon one side or the other very gross perjury. Several policemen were called and were examined at great length. *No knife was produced or alluded to on the part of the prosecution.*

"The conviction of Pellizzoni produced a great sensation in the neighborhood where he resided, and where he bore the character of a singularly inoffensive man, and those who have known him entertained a very different opinion from Mr. Baron Martin, and a shrewd suspicion, if not a certainty, existed amongst them as to who the culprit really was. Doubts were ventilated through the columns of the 'Daily Telegraph,' and the proprietors of that journal took a strong personal interest in the matter. Mr. Negretti, the well-known optician, who was also a countryman of the convict, was indefatigable in his behalf, and ultimately the force of public opinion in the neighborhood, and the interference of a Catholic priest, induced a man named Gregorio Mogni to confess that he was the person who had committed the crime, although, as he alleged, in self-defence.

"Mogni was committed and tried at the following sessions of the Central Court upon a charge of manslaughter. It fell to the lot of Mr. Justice Byles to try the case. This learned judge possessed great acuteness, but showed very clearly that he was influenced by the strong view previously taken by Mr. Baron Martin.

"I was instructed by the friends of Pellizzoni to prosecute, and Mr. Montague Williams, upon very slight materials, and with very great ability, defended. Mogni was convicted, nor can I see how any other result could have been arrived at. This, however, brought about a very peculiar state of things, as there were two men now lying in Newgate convicted of the same crime. In the one case the judge had declared that he had no doubt of Pellizzoni's guilt; in the other, Mogni, who could not be mistaken, declared that he alone committed the crime. Fortunately for the ends of justice, whoever killed Harrington also stabbed Rebbeck, and so, to solve the difficulty, the government put Pellizzoni through the ordeal of a trial for this latter offence, and Mr. Giffard prosecuted on their behalf, which insured the certainty that the evidence would

and (2) the temper of the supposed assassin. A rough and ignorant assassin will multiply wounds, so as to make sure of his victim; a man acquainted with surgery will economise them, and direct them to the most fatal part. Whether the defendant acted coolly, from the

be fully sifted. The case occupied some time, I forget how long, and Mogni was called, and adhered to his confession. He was cross-examined very rigidly, but in the end the jury without hesitation acquitted the prisoner; and I do not entertain the slightest doubt that he was perfectly innocent, and very unpleasantly for himself, and at the risk of his neck, illustrated the old lines commencing, "Those who in quarrels interpose." It is, however, very seldom that a man who has engaged solely in the endeavor to prevent strife has been placed in such jeopardy, and it is worthy of consideration to what this can fairly be attributed; I believe it arose from the haste and impetuosity with which the police first adopted a conclusion, and afterward adhered to it, although they were well aware of circumstances that strongly militated against its correctness.

"It will be remembered that upon the first trial no weapon was produced or alluded to on the part of the prosecution, though it will scarcely be credited that the knife with which both injuries were inflicted had been for some time before in the hands of the police. This fact was not brought before those who conducted the prosecution, nor before the jury who tried the case, and it is difficult to find satisfactory reasons for this concealment. The knife had been found at some distance from the spot where the crime had been committed, and could not have been conveyed there by Pellizzioni. It was known throughout the neighborhood that it was Mogni's knife, and it is difficult to believe that the police alone were ignorant of this fact.

"Upon the subsequent trials it was produced and identified by Mogni. He had, after stabbing the two men, handed it to a fellow-countryman named Cetti, who had thrown it in an out-of-the-way place, where it was subsequently found.

"The public house in which the occurrence took place was evidently of a very low description, and the witnesses called upon the trial were not unlikely to be influenced by the opinion of the police. The police had the practical management of the prosecution before it came into court; and I have felt that in calling attention to its remarkable details, I am performing a useful duty to society.

"It must be borne in mind that very few in the position of Pellizzioni would be likely to receive the aid of a powerful journal, or obtain the sympathy and assistance of influential friends.

"Upon the original trial certain death-bed statements made by Harrington, when *in extremis*, were sworn to by a policeman, which inculpated the prisoner, and which were said to be taken down by another constable. This circumstance doubtless was instrumental in obtaining the first verdict, but through the conduct exhibited by these witnesses it was entirely discredited by the juries upon the two subsequent investigations."

mere determination to take life, or passionately, from the purpose to inflict injury, and to satisfy revenge and hatred, may be thus gathered. In this way premeditation, and a specific intent to take life, may be inferred, and a test given by which the juries may distinguish between the several degrees of murder.¹

So, too, by the shape and direction of wounds, the presumption of suicide may be made or refuted.² The direction of the wound may show, (1) whether a shot was fired from within or without a house ; (2) what was the position and distance of the assailant ; and (3) sometimes, what was the force used.³ Thus, where a farmer was found dead on the high-road, with his throat cut, “the wound was found to have been made, not as is usual in suicides, by carrying the cutting instrument from before backwards, but as the throats of sheep are cut when slaughtered by a butcher. The knife had been passed in deeply under and behind the ear, and had been brought out by a semicircular sweep in front; all the great vessels of the neck, with the œsophagus and trachea, having been divided *from behind forwards.*” The prisoner, who was proved to have been a butcher, was subsequently tried and executed for the crime.⁴ Similar questions, arising from a hemorrhage from the pudenda, have been already noticed.⁵ But evidence of this class is not distinctively a matter of expert exposition ; nor are the conclusions drawn from it sufficient in themselves to sustain a verdict of conviction.⁶

§ 808. *Was the injury found upon a dead body the real cause of death, or of the changes which the body had undergone.*—In answering these questions we must look to the reactions which have taken place.⁷ Where the following evidences of reaction are manifest, it may be concluded with great probability that the injury was inflicted during life :

a. Inflammation and its attendants, festering, traces of healing, recent granulation and scars.

b. A filling of the small bloodvessels around the wound with blood,

¹ See *infra*, §§ 843 *et seq.*

² See *supra*, § 292, *et seq.* The unsatisfactory character of evidence of this class is illustrated in *Saunders v. State*, 37 Tex. 710, as given *infra*, § 809 ; see Wh. Cr. Ev., § 771.

³ See *infra*, § 809.

⁴ Taylor's Med. Jur. 191.

⁵ See *supra*, § 705.

⁶ See recent authorities given in Wh. Cr. Ev., § 771.

⁷ See *supra*, § 691.

so as to produce red stripes about the edges of the wound. This appearance, however, may also be observed in cases where the injury was produced after death.

c. Changes of color, red, brown, blue, greenish, yellow, produced by extravasation. These will not be observed until some time after the injury has been inflicted.

d. Exudation of curdled blood from broken bloodvessels. That the blood is curdled is no evidence that it must have exuded after death.

e. Vesications from burning, the appearance of a red inflamed ring around the burnt place. Blisters, although they may expose, when laid open, a red skin, yet indicate nothing as to whether the burning occurred before or after death, since the same appearances may be produced by intense heat in this case as are observed upon a living body. Scalding never produces vesication upon a dead body, but causes the epidermis to fall off in shreds. Flame applied to the skull-bone of a dead body will cause it to crack open, and the lamellæ to fall off in layers.

f. A cracking open of the edges of the swollen wound. The wound made by a shot when it enters a living body is at the surface swollen, blackened and cracked open around the edges; the passage made by the ball is narrow, and filled with clotted blood, while infiltration of blood will be observed in the surrounding parts. In the case of dead bodies the ball draws the skin into a funnel shape.

It is possible that all the above marks may be wanting, and yet the injury have been inflicted during life, especially in cases where death follows immediately upon the injury; but such cases are only exceptional.¹

Whether the changes which the body has undergone are to be ascribed to the injuries inflicted upon it, or to some previous cause, as disease, can only be decided by a careful examination of all the circumstances bearing on the case in hand. The constitution of the person, his predisposition to disease, the locality in which he found his death, the species of injury and its extent, together with other

¹ As stated by Dr. Tidy (Leg. Med. vol. i., p. 294), in a life bruise the true skin is red and blood-stained, extravasation occurring in the subcutaneous tissue, but in a *post-mortem* hypostasis the discoloration is superficial. * * * Wounds inflicted after death generally discolor rapidly around the edges, and acquire a dry, brownish parchment like appearance.

As to examinations of the body internally, see Tidy, *ut supra*, p. 296.

circumstances, must be considered in weighing the probabilities of the case.

§ 809. *c². Particular class of weapon.—a³. Gunshot.*—As has been shown, “near” wounds are shown from the blackening and burning of the skin, and the width and laceration of the wound. From this the presumption of self-infliction may be drawn, though homicidal wounds, in a close conflict, may have the same characteristics.¹

In wounds produced by a shot, it is sometimes the case, as is stated by Dr. Casper,² that different organs are bored through, and death caused by bleeding; while in others the organ is utterly torn to pieces, and death produced in this way. The instrument used in any given case is rarely a subject of examination on the part of the physician. When this is the case, the question occurs, whether the instrument has been discharged; and if so, when. Boutigny has answered this question by describing minutely the changes which take place within given periods, upon the powder which remains in the place after it is discharged. Much weight, however, should not be allowed to these results, nor could a verdict of conviction be satisfactorily rested on evidence of this class. The correctness, also, of the results may be questioned, from the fact that no allowance is made for different qualities of powder, different states of the atmosphere, etc. In questions of this kind, Casper holds that gunsmiths, huntsmen, etc., are generally much better qualified to answer than scientists, and their testimony should be preferred.

In reference to the effect produced by the shot upon the body, the condition of the parts where the ball entered and where it emerged, the course which it followed, the resistances with which it met, etc., must be noted. In a case tried in Texas in 1873,³ it appeared that Saunders, the defendant, was in the habit of getting up at night to look after the horses under his care, he being in the employ of Huffines, the deceased. On the night of the homicide Saunders claimed that some one was prowling about the premises, and he called on the deceased to go out with him and look. He had a pistol; and when they were a short distance from the house, the deceased was killed by

¹ See *supra*, §§ 707 *et seq.* As to inferences of this class, see Wh. Cr. Ev., §§ 709-72, 774.

² Gericht. Med., ed. 1859, p. 146.

³ *Saunders v. State*, 37 Tex. 710.

a shot from the pistol in the hands of the defendant. The defence was that the shot was accidental ; that the deceased, at the time of the shooting, was walking before the defendant ; that the defendant had cocked his pistol, and was trying to let the hammer down, holding the pistol in his hands, at an angle of about 45° ; that the hammer slipped from under his thumb, causing an accidental discharge of the pistol, the ball penetrating, as he supposed, the deceased's back. In point of fact, however, the ball entered the head of the deceased, about the base of the occipital bone, proceeding about two inches in a downward range towards the chin. Experts were produced to contradict the defendant's statement by showing that it was irreconcilable with the course actually taken by the ball. The defendant was on this evidence convicted and sentenced to death ; but in the Supreme Court the judgment was reversed and a new trial ordered.¹

¹ "The State," said Walker, J., "has adopted a theory, favored by the evidence of professional witnesses, inconsistent with the statements of the appellant which appears to be predicated (to postulate?) that the direction of the ball, after it entered the head of the deceased, must necessarily have followed the prolongation of a straight line from the point at which it was discharged from the pistol. This theory, if true, to account for the depression in the line of direction pursued by the ball, after entering the man's head, would establish the fact that the ball must have been fired from a point higher than the head of the deceased, which might, perhaps, involve the case in speculation, if not in absurdity. At all events, it is inconsistent with the idea that the pistol was held in the ordinary position in which such weapons are held when aimed at an object, if the theory of the state be correct. But, after having examined some authorities of very high standing on gunshot wounds, and particularly the reports of surgeons employed in the field and base hospitals during the late war in the United States, we are perfectly satisfied that to whatever degree of perfection the noble science of surgery may have been brought, no rules have ever been laid down or attempted to establish the geometrical direction of war missiles after entering the human body." * * * There are plenty of living men who could, upon their own bodies, illustrate the erratic and utterly uncertain direction of gunshot wounds, by a simple reference to the wound of entrance and the wound of exit. A ball passing through the atmosphere under a diminishing force will be deflected more easily than one flying with the full velocity of its exit from muzzle of the piece from which it is discharged. Many instances are found where partially spent balls, entering merely the muscular parts of the human body, have traversed a line varying many degrees from the line upon which they entered the body. The most remarkable and singular results are often witnessed where leaden balls come in contact with the tough sinewous cartilages or ossified parts of the human body. Nevertheless it is true that the conical balls used in modern warfare, when passing through a line of any direction

§ 810. *b³.* *Punctured wounds.*—The inferences to be drawn from this species of wound have been already noticed.¹

§ 811. *c³.* *Incised wounds.*—Here the question may arise between accidental injuries, through the falling upon or striking against glass or crockery, and voluntary, when the wound is intentionally inflicted. It is also to be observed that in suicide an incised wound on the throat is often preferred, though it is sometimes inflicted by an as-

with great velocity, and brought in contact with substances of less density, will pass forward on a straight line, for a short distance, unless the form of the object be such as to exert an unequal resistance on the striking surfaces. We feel sure we are authorized in these remarks by the experience and scientific observation of every author who has treated the subject, and especially those who have written from personal observation. We do not feel authorized in a legal opinion to enter at length into mere scientific speculations. But we think in this case we are called on to deduce from science as far as it goes, and from known facts and principles, whatever can be so legitimately deduced in favor of innocence and human life."

In Billings's case, 18 Alb. L. J., 261, it was "shown by very reliable experts, mechanical, medical, and scientific, that a bullet found in the head of deceased, and which caused her death, was very much lighter than any of those usually fired from guns of the kind found in the well; that one of the latter bullets could not have lost sufficient weight in its progress after being fired to reduce it to the size of the one found; and that a bullet fired from the gun at a point near enough to discolor the glass of the window with burning powder, as was done in this case, would have passed entirely through the head of the deceased instead of lodging in it."

In *People v. Smith*, California Supreme Court, October 1879, 4 Pacific C. L. J., 213, "it was held that testimony having been given to the effect that the course of the pistol ball through the body of the deceased was direct from the point of its entrance to the point where it was found, it was error to permit the prosecution to ask the opinion of a medical witness, as an expert, as to the relative positions of the deceased and the defendant at the time when the defendant fired the shot, the object being to show that the prisoner stood on higher ground than the deceased." The court said: "The subject-matter of the inquiry is not one requiring any peculiar scientific study or skill. An ordinary juror is as competent to determine the relative positions of the parties as the most skilful physician or surgeon; and such being the case, the prosecution was not entitled to the opinion of the witness as a medical expert, as evidence in the case. All the authorities so hold. See 1 Greenl. Ev., § 440, and cases cited. There is nothing in the nature of the subject of the inquiry which would enable a physician, however skilful, to give an opinion of any greater value than that of a man skilful in any other profession. In other words, the solution of the question does not require professional or scientific skill." 20 Alb. L. J. 423.

¹ See *supra*, § 283.

sassin, in which case it may have been inflicted in order the better to conceal the crime.¹ These points have been considered under prior heads.²

Wounds inflicted by a blow with sharp instruments, such as a razor, knife, dagger, sword, bayonet, scythe, etc.,—we here translate from Dr. Casper³—may be either shallow or deep. Where the instrument used was sharp, the outer edge of the wound will, of course, be smooth, but the surface somewhat flattened. The appearances resulting from reaction differ according to the portion of the body on which the injury is made, and the length of time intervening between the infliction of the wound and the examination of the same. If the instrument presses to the bone, it will either break this into pieces or else divide it; this latter is more apt to occur with the bones of the fingers or arm. Both effects are often seen where the blow falls upon the skull. The size of the instrument by which such a wound was inflicted cannot be determined from the appearance of the wound. Where the muscles are cut crosswise, they contract and leave a gaping wound, which by no means answers to the instrument with which it was inflicted.

(a) Where the wound is produced by a cut with a sharp instrument, the sides are smooth and not flattened, and converge to a sharp angle at either end. The same appearances from reaction will be seen as in the case of wounds produced by a blow. Cuts which do not penetrate much beneath the skin may yet open large bloodvessels, and cause the person to bleed to death. In such cases it will often be impossible to determine which is the beginning and which the end of the wound. Surrounding circumstances, such as blood upon one hand, and not upon the other, the rent made in the clothing, etc., will sometimes throw light upon this point. When the wound is made upon a neck where the skin is very much wrinkled, the appearance will be that of several separate cuts.

Wounds made by a thrust with a sharp instrument produce little bleeding externally, except where they pierce some large bloodvessel lying near the surface of the skin; and, where the instrument is small, they exhibit scarcely any appearances of reaction. If, however, the instrument penetrates to the internal organs, gushes of blood, or urine,

¹ Taylor's Med. Jur. 192; Wh. Cr. Ev., §§ 770, 781.

² See *supra*, §§ 283–7, 297.

³ Gericht. Med. 1857, p. 139.

or food in process of digestion, will follow. It deserves to be mentioned in this connection, that it is often very unjust to blame the examining physician for not tracing out the original source of the bleeding, or the very bloodvessel penetrated by the instrument. Such an examination would in many cases prove very tedious and laborious, and throw no additional light upon the cause of death.¹

Wounds produced by cutting afford no means of determining the size of the instrument.²

(b) Dull instruments, as noticed by Dr. Casper,³ produce very different results, according to the strength with which the blow is given, and the part of the body struck. Sometimes instant death is produced by the crushing of some organ; or death, more or less speedy, may result from rupture of a bloodvessel, owing to concussion. Bones may be injured in various degrees, from a slight fracture to entire crushing. Organs may be torn apart in such a way that the wound will not at all correspond with the instrument by which it was made. The appearance of the person may be entirely changed by the breaking of certain bones in the face, by the swelling of the lips and eyelids, etc. Several of these effects may be combined, either by the use of several different instruments, or by the use of one which has several different sides, adapted to different purposes.

Rupture of the internal organs frequently results from the use of such instruments. Spontaneous rupture never occurs with sound organs; and whenever the *basis crani*, the liver, the lungs, etc., are ruptured, it may safely be supposed the effect of considerable violence.

§ 812. d³. *Contused wounds*.—This involves the inquiry whether the wound came from a fall from a height, or against a hard surface, or from a blow from a heavy body falling upon the deceased, or by voluntary or involuntary shocks against a hard substance when in rapid motion, or by a blunt weapon in the hand of an assailant, or, in rare cases, of the deceased himself.⁴ These points have already been noticed.⁵ In Stirling's case (Cleveland, Ohio, 1860), where the deceased was found at the bottom of a flight of stairs, with a contused wound on his head, which shortly caused his death, the verdict of the jury followed the weight of medical evidence, that the death was from a fall.

¹ See *supra*, § 283.

² Gericht. Med. p. 143.

³ *Supra*, §§ 289 *et seq.*

² Wh. Cr. Ev., §§ 769, *et seq.*

⁴ *Supra*, § 297

§ 813. *d^o* Number of wounds.—In *suicides* a legal presumption of self-agency has been strengthened from the wound being single,¹ though such presumption can be but weak, since an assassin may often dispatch his victim with a single blow, and, on the other hand, suicides have struck themselves repeatedly before the blow took effect.² Recent wounds on the back of the hands, and wounds the result of a struggle, give a strong homicidal presumption.³

“When we find several wounds on the body of a suicide, it generally happens that one only bears about it a *mortal* character, namely, that which has caused death. On this account it has been asserted by some medical jurists, that when two mortal wounds are found upon a body, and particularly if one of them is of a stunning or stupefying tendency (*i. e.* affecting the head), they must be considered incompatible with suicide. An inference of this kind can be applied to those cases only in which the two wounds, existing on different parts of the body, were likely to prove immediately fatal. It must, however, be borne in mind, that all suicides do not *immediately* perish from wounds which are commonly termed mortal; on the contrary, they have often the power to perform acts of volition and locomotion, which might by some be deemed wholly incompatible with their condition. It is difficult to say whether one wound was likely to destroy life so rapidly as to render it impossible for the person to have inflicted another upon himself; but when there are several distinct incisions on the throat, each involving important bloodvessels, there is good reason to infer that they have resulted from an act of murder.”⁴

§ 814. (a) *Injuries by violence*.—In cases where there are no external marks of violence whatever upon the body, it is by no means to be concluded simply from that reason that death was not produced by violent means. So far is this from being the case, no external traces of violence, as we are reminded by Dr. Casper,⁵ are to be expected in such injuries as are followed by immediate or very speedy death; as, for instance, in ruptures of the organs, etc. The following remarkable case is cited by him in this connection:—

A driver who, upon a cold winter night, was descending the hill

¹ Burrill, Circum. Ev. 689.

² See *supra*, §§ 283, 299 *et seq.*, 717–22, etc. See Wh. Cr. Ev., § 781.

³ *Supra*, §§ 297 *et seq.*; Taylor's Med. Jur. 201.

⁴ Taylor's Med. Jur., 7th Am. ed. 232.

⁵ Handb. Gericht. Med. 1847, p. 122.

from Spandau with a heavily-loaded wagon, and had dismounted in order to relieve his horses, was overtaken by the wagon and thrown with violence against a tree by the roadside, where he was found next morning lying dead. The only external marks of violence were a slight abrasure of the skin upon the left shoulder and on the right jaw. There was nothing remarkable about the appearance of the head except that the *sinus transversus* seemed more full of blood than usual. On opening the spine at the neck about a quart of dark blood ran out. The muscles of the back were suggillated through the whole length of the spine, but the marrow was uninjured. Thirty ounces of dark blood were found in the left breast. The heart had been torn from its proper position, was entirely separated from the large bloodvessels, and was lying almost loose in the cavity of the breast. The pericardium had been torn throughout its entire diameter. The ends of large bloodvessels, as of the pulmonary artery and of the *aorta*, were distinctly traceable in the cavity of the breast. The skin of the heart was sound and firm, and the heart still contained much dark, clotted blood. The left lung also was torn throughout its middle segment, and a wound two inches long and a half inch deep was found on the liver. Yet there was nothing remarkable in the external appearance of the body.¹

¹ "The throat and chest are commonly selected, when cutting instruments are employed; while the chest, especially in the region of the heart, the mouth, the orbit, and the temples, are the spots generally chosen for the perpetration of suicide by fire-arms. But it is obvious that any of these parts may be also selected by a murderer, with the especial design of simulating a suicidal attempt; therefore, the mere situation of a wound does not suffice to establish the fact of suicide. Some have regarded it as fully established in legal medicine, that when wounds exist at the back part of the body, it is a positive proof that they have not been self-inflicted. This situation is certainly unusual in cases of suicide, but, as Orfila observes, it is not the situation, so much as the *direction* of a wound, which here furnishes evidence against the presumption of suicide. A wound, traversing the body from behind to before in a direct line, is not likely to have resulted from a suicidal attempt; at least it must be obvious that it would require more preparation and contrivance on the part of a self-murderer so to arrange matters that such a wound should be produced, than we can believe him to possess at the moment of attempting his life. Besides, his object is to destroy himself as quickly and as surely as circumstances will permit; he is, therefore, not likely to adopt complicated and uncertain means for carrying this design into execution. Nevertheless, we must not always expect to find suicidal wounds in what an anatomist would pronounce to be, the most appropriate situation to produce instant destruction. An incised wound in a con-

§ 815. *e*². *Situation of wounds*.—The presumptions falling under this head have been already noticed.¹

§ 816. *b*¹. *Expression of countenance*.—“In cases of suicide,” says Mr. Burrill,² “death being desired and determined on, there is no expression of fear on the countenance, though it may be haggard from the influence of other passions; the eyes being usually closed and sunken. In cases of assassination, on the contrary, where death is struggled against and shrunk from, there is always a degree of fear, amounting sometimes to the extremity of terror, imprinted on the visage, the eyes open or staring. The countenance in these cases is also usually pale, although sometimes there may be the opposite appearance of redness or suffusion. The latter circumstance is considered important, as it may indicate the use of violence in order to stop the cries of the subject of the crime.”

In suicides produced by despair, however, it has been observed that the expression of the countenance is often more agonizing than that produced in any other kind of death.³

Dr. Tidy (Leg. Med. 1882) tells us, when speaking of the battle of Sedan, of a group of six soldiers who were killed by a shell; “in one case the head was carried off, but the face retained its expression of laughter. A second was found holding a cup from which he was drinking when the shot carried off his head.”

§ 817. *c*¹. *Inferences from surrounding objects*.—*a*². *Clothing*.—This, in reference to the kindred presumption of premeditation, will be considered under a subsequent head. In Courvoisier’s case, it was held that a cutting through a cravat or portion of a dress was indicative of homicide, since it was not likely that a suicide would strike the blow without first removing such obstacles.

sealed, or not easily accessible part, is presumptive of murder; because this kind of injury could have resulted only from a deliberate use of the weapon. Suicidal wounds are, however, sometimes found in unusual situations. In reference to this subject, it has been remarked, that there is no wound which a suicide is capable of inflicting upon himself, which may not be produced by a murderer; but there are many wounds inflicted by a murderer, which, from their situation and other circumstances, a suicide would be incapable of producing on his own person. We cannot always obtain certainty in a question of this kind—the facts will often allow us to speak only with different degrees of probability.” Taylor’s Ev., 7th Am. ed., § 275-6.

¹ *Supra*, §§ 297 *et seq.*

² Circumstantial Evidence 686.

³ *Infra*, §§ 851 *et seq.*

§ 818. The effect of blood on clothing has been already examined.¹

Rifling of the pockets, tearing of the dress, or marks of its having been put on in a manner unusual for the deceased, incisions or perforations, dirt clinging to the texture, all afford grounds for a presumption of homicide.²

In rape, the condition of the clothing forms one of the main points from which a presumption of violence may be drawn.

§ 819. *b². Agent commensurate to the effect.*—If no weapon be found by which the offence could have been committed, the presumption of homicide, as distinguished from suicide, is very strong.³ “If a weapon be found near the body,” says Mr. Burrill,⁴ “or within a short distance from it, its nature and the degree of its sharpness, as corresponding with the appearance of the wound, are important considerations. Its appearance, also, and relative position of the body (that is, as lying on the right or left side of it), require it to be most accurately examined and considered, as the appearances of suicide are sometimes attempted to be given to murder by the perpetrator, in order to escape suspicion and discovery. The instrument with which a suicidal wound of the throat is most commonly made is a razor; and

¹ *Supra*, §§ 304 *et seq.* As is elsewhere shown (Wh. Cr. Ev., § 777) dried blood stains cannot be shown to be human with sufficient certainty to sustain a conviction. The following is from the N. Y. Observer, of Aug. 3, 1860: “In 1825, a youth resided in a small town in Loudon co., Va., who was a barkeeper of a tavern; he was a confirmed gambler. He set off one day on horseback on a travelling tour, with a person whom he knew to have in his possession a large sum of money, and before he started, armed himself secretly with a pistol, at the muzzle of which was a small dagger attached. On Saturday night they arrived at Centreville, in Fairfax county. After supper they left the house, and in a short time the young man returned without his companion. When the landlord asked for him, the answer was, ‘Am I his keeper?’—the ominous reply of the first murderer! About daylight the next morning he was seen crossing a field where the corpse was found perhaps a day or two afterwards. He returned to his residence on Sunday, and I conversed with him within thirty hours after his hands were reeking with blood; he seemed gay and cheerful as ever. He was arrested on suspicion, and in his trunk was found the pistol, which to the naked eye, displayed no marks of blood. When, however the microscope was applied, it was clearly discoverable, and also a very small portion of one of the hairs of the dead man’s whisker, which was of red color.” On this proof a conviction was had.

² See 1 Taylor’s Med. Jur. 188.

³ See *supra*, §§ 265 *et seq.*

⁴ Circumstantial Evidence 690.

it is frequently found either grasped in the hand or lying by the side of the deceased. Where the wound must have produced almost instant death, if the razor is found closed, there is fair ground to suspect the interference of another person; although the circumstance also has happened in cases of suicide. If the instrument be found still firmly grasped in the hand of the deceased, no better circumstantial evidence of suicide can perhaps be offered, it being impossible that any murderer could imitate such a state and position. But where the razor is held loosely in the hand, or with no compression of the fingers upon it, there is room for the supposition of homicide, which may become strongly presumptive, especially if no blood appear upon the hand."

§ 820. *c¹.* *Place where found.*—Was the ground marked by struggling, and does it show that a body was dragged over it? These indications, particularly the latter, are much relied on by the courts as showing violence.¹ So of the prints of feet, though here there is great danger that, by a change of shoes, a crafty assassin may throw a false suspicion on an innocent person.² So as to blood; but here, also, there is great danger of fraud. The cases have not been unfrequent, where adroit assassins, by smearing blood on weapons belonging to others, or by making false tracks, have baffled inquiry.

§ 821. *d¹.* *Position and appearance of the body.*—*a².* *Attitude.*—Where the body stiffens in an attitude of resistance or imprecation—where, as in Cunningham's case, it is mutilated—where as in Webster's case, it was cut to pieces in order to be burned or otherwise disposed of—where it is crumpled or doubled up so as to be packed away in a box—where it is sunk in a pond loaded with stones—where an attempt has been made to disguise the features—here homicide will be presumed.³ So, as has already been noticed,⁴ a presumption of violence is lent by the fact that a weapon is found in a stiffened hand, lying on it in such a way as to be supported by the hand as it was stretched after death, and not grasped by it as it would be in case of suicide. So, on the other hand, the firm grasping of a pistol or weapon indicates suicide. Where the weapon lies close to the body on the ground, no inference either way can be drawn.

In a New York case a medical expert had testified as to the form,

¹ State v. McCann, 13 Sm. & M. 478.

² See Wh. Cr. Ev., § 796, *infra*; §§ 1172, 1182.

³ See Burrill's Circumst. Ev., p. 684.

⁴ *Supra*, §§ 297 *et seq.*

nature, extent, depth, length, width and direction of the wound, and its precise location on the head. The question was then put, "In what position do you judge the body to have been when it received the blow on the side of the head?" and questions were also put as to the position of the body when other wounds were received. The court admitted them; but the Court of Appeals, Woodruff, J., giving the opinion of the court, decided that the questions were incompetent; that medical men are not presumed to be experts in the matter of giving and receiving such blows, and that the jury are equally capable of drawing the proper inferences from the facts proved if material.¹

The *posture*, in case of a sudden and surprised death, is lying on the back, and in such case, unless natural causes of sudden death be found, the presumption is homicide.² Then, again, the disposition of the limbs is significant. Sentimental suicides compose themselves gracefully for the spectacle. But when despair is the controlling cause, the countenance at least may display misery even more intense than that of a death struggle with an assassin.³

§ 822. *b². Marks of blood.*—This topic has been already discussed.⁴

In a case before the New York Court of Appeals, in 1868, it appeared that when the prisoner was on trial for murder, the State's attorney introduced as a witness the officer who made the arrest, and who testified, under objections, that he found *blood* on the prisoner's clothes found in his room. The judge allowed the clothes and stains (of blood) to be shown to the jury. On exceptions to this decision, the case finally came up before the Court of Appeals. That court said: "Stains of blood found upon the person or clothing of the party accused have always been recognised among the ordinary *indicia* of homicide. The practice of identifying them by circumstantial evidence, and by the inspection of witnesses and jurors, has the sanction of immemorial usage in all criminal tribunals. The testimony of a chemist who has analyzed blood, and that of the observer who has merely recognised it, belong to the same legal grade of evidence."⁵ It is now, however, the prevailing opinion that dried blood stains can-

¹ Kennedy *v.* People, 39 New York 245. That experts are limited to matters belonging to them distinctively as specialists, see Wh. Cr. Ev., §§ 411, 415.

² See *supra*, §§ 297 *et seq.*

³ See *supra*, § 806. And see Wh. Cr. Ev., § 781.

⁴ *Supra*, §§ 304 *et seq.*, Wh. Cr. Ev., § 777.

⁵ People *v.* Gonzalez, 35 N. Y. 49; Wh. Cr. Ev., § 777; and see articles in 15 Am. Law Reg. 561; 16 Am. Law Reg. 258.

not be pronounced to be human with such certainty as to sustain a conviction.¹

¹ Wh. Cr. Ev., §§ 777-8; see *supra*, §§ 304 *et seq.*

"In examining a dead body, attention should be paid to the state of the mouth and throat. Assailants who make their attack during sleep, sometimes endeavor to close the mouth, or to compress the throat, so as to prevent an alarm being given. In one instance, there were the marks of finger-nails around the mouth; in another, ecchymosed impressions, as if produced by a hand, were found upon the throat of the deceased. The hands of a dead person should always be examined; many recent cuts, excoriations, or incisions found upon them, especially if on the back of the fingers or thumbs, will indicate that there has been a mortal struggle with the assailant. In the inspection, the examination of the stomach should not be omitted. The presence or absence of food, mucus, or blood, may furnish evidence of considerable importance in the elucidation of the case. All marks or stains of blood, or dirt, on a dead body, require special observation. The impression of a hand, or of some of the fingers, may be found on the skin in a situation where it would have been improbable or impossible for the deceased to have produced it, even supposing that one or both of his hands were covered with blood. In one case of murder, there was found the bloody impression of a left hand upon the back of the *left hand* of the deceased, in such a position that it was quite impossible the deceased himself could have made the mark. In all cases it should be noticed whether the *inside* or *outside* of the hand, or whether one or both hands are stained with blood; and the size and position of the stains should be described. Marks of blood on the dress of a wounded person, or a dead body, may often furnish important circumstantial evidence. If there are several stabs or cuts on the body involving the dress, it should be observed whether the edges of one or more of them are stained with blood, as if from the wiping of a weapon, and whether the stain is on the outside or inside of the article of dress. In simulated personal injuries, the stain of blood may be, through inadvertence, applied to the outside of the dress—a fact which might, in some instances, lead to the detection of the imposture." (See case by Dr. Bayard, "Ann. d'Hyg.", 1847, vol. 2, p. 219.

"*Marks of blood on the assailant.*—It is a very common idea that no person can commit a murder in which blood is effused, without having his person and clothes more or less covered with blood. Nothing can be more erroneous. On several occasions I have been required to examine articles of clothing which had been worn by persons subsequently convicted of murder by wounding, and either no blood has been found on any part of the dress, or only small spots wholly out of proportion to the quantity of blood which must have flowed from the deceased. Reg. *v.* Harrington, Chelmsford Assizes 1852; R. *v.* Flack, Ipswich Assizes 1853; Reg. *v.* Cass, Carlisle Assizes 1860; Reg. *v.* Rowlands, Beaumaris Assizes 1861; Reg. *v.* Edmonds, Swansea Assizes 1862. In the case of Gardner, C. C. 1862, in which there had been a large effusion of blood from a severe wound in the throat, no blood-stains were found on the clothing

§ 823. *c². Bruises.*—Here, in connection with the points already mentioned,¹ we may call attention to the legal presumptions to be drawn from the appearances called *ecchymosis* and suggillation. These of the man who was convicted of the murder. It is obvious that the throat of a person while standing sitting or kneeling, may be cut by a murderer from behind, and thus in appearance simulate suicide. Under these circumstances the clothes of the assassin would escape being stained with blood. The flowing or spitting of blood upon the clothes of the assailant will depend upon his position in relation to the deceased at the time of inflicting the wound, and this must always be a matter of pure speculation. In entire violation of this simple principle, the fact of a prisoner's clothes not being marked with blood has been on more than one occasion urged as a proof of his innocence. Reg. v. Dalmas, C. C. C., June, 1844. In this case, the counsel for the prisoner wished to impress the jury, in what is commonly denominated a "powerful" speech (in which medical facts and opinions are usually ignored), that no person could cut the throat of another without having his clothes covered with blood; and as there was not proved to be any blood on his clothes, the prisoner could not have been guilty of the crime. The facts were simply that the throat of the woman was cut while she was walking across Battersea Bridge, the prisoner having inflicted the wound from behind! In the case of Lord W. Russell, the act of murder was committed by Curvoisier while in a state of nudity. Policemen are frequently misled in searching for criminals, by looking for blood on clothing as a necessary accompaniment of an act of murder. This also leads them to magnify stains of red paint, iron-rust and fruit-stains on the dress of an accused person into marks of blood.

"The presence of spots of blood on articles of clothing, knives, etc., taken from the persons of those who are accused of murder, may be quite consistent with innocence. Small spots or stains have often an undue importance attached to them. I have known minute spots of blood on the shirt of a man tried for murder by wounding, regarded as furnishing proof of criminality, until it was explained that they were probably derived from flea-bites, and that some were on one side and some on the other, showing that the shirt had been worn on the two sides. The coarse clothing worn by laborers may acquire blood-spots from a variety of accidental circumstances, which the accused may not always be able to explain. When he knows the stains are there, and shows great anxiety to give some explanation of their presence, as by falsely stating that he had assisted in killing a pig, a rabbit, or that he was carrying game about him—[or, as in the case of Christian Berger, convicted of the murder of Miss Watts in 1866, that he had kicked a piece of raw meat in a butcher shop, and thus made his shoe bloody.—P.]—there may be strong ground for suspicion; but a medical practitioner should always make due allowance for the accidental presence of blood on the clothes of working men." Taylor's Med. Jur., 7th Am. ed., 289–90. That hair can be a means of identification, has been already seen, *supra*, § 295.

¹ *Supra*, §§ 272, 289.

appearances, in proportion as they increase in number and extent, evolve the presumption of homicide.

Where death has been produced by violence, certain suspicious spots are often found upon the body. These are commonly roundish in shape, from one-quarter to three-fourths of an inch in diameter, of a red, or reddish-brown, or a dirty yellowish-brown color, rather hard and tough, and when cut into exhibit no real suggillation. These spots may puzzle the examining physician, and, where the manner of death is unknown and is attended with suspicious circumstances, they require the most minute attention, as they may possibly indicate a struggle in which the person was engaged at the time the death occurred. In the majority of cases, however, these spots are produced by the person's striking against some hard substance at the moment of death, and have nothing to do with the manner of death. The same appearances may also be produced after death by rough handling of the body, etc. Even some days after death pseudo-suggillations may be produced, by excoriating some part of the body with a stiff brush, etc., which might easily be mistaken for reactions that occurred during life.¹

§ 824. *Have the injuries which appear upon a dead body been inflicted before or after death?*—Generally, as is stated by Dr. Casper,² injuries inflicted during life may be easily distinguished from those inflicted upon the dead body by the fact that in the latter case there will be no appearance of reaction, such as inflammation, bleeding, festering, swelling, granulation, or drying up of the edges of the wound. But it is important to observe that in the case of fat bodies, injuries inflicted after death—as, for instance, a cut with a knife—often assume an appearance, when the body begins to swell, which it is very difficult to distinguish from reactions that have taken place during life. This may occur where bodies have lain undiscovered in water until the process of decomposition has begun. It will also be difficult, often impossible, to distinguish the two cases in question where the injured parts have been singed or charred by fire. But, while it is true that injuries inflicted upon a dead body never show any appearance of reaction, it is by no means true that reactions always appear where the injury has been inflicted during life. Many

¹ *Supra*, §§ 272 *et seq.*; see Wh. Cr. Ev., § 781.

² Gericht. Med., p. 128, and see fully *supra*, §§ 265 *et seq.*

cases occur, some of which have been already noticed, where no trace of suggillation, no inflamed places, no festering, etc., can be seen upon the body, even though the injury was inflicted during life. This is especially the case where death is very suddenly produced by the opening of some large bloodvessel, as of the *carotis*, *jugularis*, etc. In such case there is not the slightest trace of reaction, no suggillation, festering or swelling ; and, if a wound is made upon the dead body near that which caused death, and similar to it, it will be impossible to distinguish the two.

Very frequently the injuries found upon the body are such as have been produced *lege artis*, as by cupping or bleeding, amputation, etc.¹ These require nothing more than a general notice at the hands of the examiner, except in cases where the practice of the operating physician is called in question.

To this head belong also injuries produced upon the body where it has served as food for wild animals.

Where the injuries found upon the body are such as have been the immediate cause of death. In this case, of course, the examination of the injuries should be very careful and thorough. The suggillated places, where they are prominent, should be accurately described —the size, diameter, etc.²

“ In the later stages after death,” says Dr. Tidy,³ “ we agree with Orfila that it is utterly beyond the power of man to give a decided, or indeed any opinion, of value as to the time of death, even with a full knowledge of the circumstances of the case.”

§ 825. e¹. *Probability of the infliction of the injury before death.*—This topic has already been discussed.⁴

§ 826. f¹. *Connection of the wound with the death.*⁵—It is necessary that the death should be shown to have been produced by the particular blow described and charged. Technically, as was shown in Peterson’s case, if the wound is charged to have come from a knife, when in fact it is from a pistol, the variance is fatal. This difficulty,

¹ Casper, *Gericht. Med.*, ed. 1857, p. 135.

² Ibid. p. 136. See these points considered fully, *supra*, §§ 272, 302 *et seq.* The subject of casual relationship is discussed in *Wh. Cr. L.*, 8th ed., §§ 152, 309 a.

³ 1 Leg. Med. 1882, p. 99.

⁴ See *supra*, §§ 272 *et seq.*

⁵ See *supra*, §§ 331 *et seq.*, as to the medical questions involved.

however, has in many cases been remedied by statutes.¹ The practical result of the common law is well stated in Bird's case, where all the judges concurred in saying that where certain assaults were put in evidence, and relied on by the prosecution, as being the cause of death, but where the clear surgical testimony was that the death was caused by a blow on the head, of which there was no evidence whatsoever, the defendants were entitled to an acquittal.²

But, while it is necessary to show that the wound caused the death, positive proof that life continued to the moment of the blow is not required.³

If it appear that the death was accelerated by the prisoner's violence, it is no defence that the deceased was laboring under a disease otherwise fatal.⁴ Nor is it a defence that the death was the immediate result of a surgical operation, which operation, in the opinion of competent surgeons, was rendered necessary to avoid the effects of a wound otherwise mortal.⁵ Nor is it a defence, that, had the deceased consented to an amputation, or been more skilfully treated, he might have recovered.⁶ But if the wound was not of a character to produce death, and death is imputable to the negligence of a medical attendant, the party inflicting the wound cannot be charged with the homicide.⁷

C. INTENT AND DESIGN, FROM WHAT TO BE INFERRED.

I. PRIOR ATTEMPTS, PREPARATIONS, THREATS.⁸

§ 827. Prior attempts of the defendant to assassinate the deceased can always be received to prove intent, and so of former menaces or expressions of vindictive feeling.⁹ And on the trial of a husband for his wife's murder, the prosecution may put in evidence a long course of ill treatment by the husband of the wife.¹⁰ And on a trial for the same crime it has even been held that adultery of the husband

¹ See also Wh. Cr. Law, 8th ed., § 520.

² R. v. Bird, T. & M. 437; 1 Den. 94; 5 Cox 11.

³ Wh. Cr. Law, 8th ed., § 309.

⁴ Ibid.

⁵ Ibid.

⁶ Ibid. Wh. Cr. L., 8th ed., §§ 152 *et seq.*, 309 a.

⁷ Wh. Cr. L. 8th ed., §§ 157.

⁸ *Supra*, §§ 776 *et seq.*

⁹ See Wh. Cr. Ev., §§ 32 *et seq.*; State *v.* Watkins, 12 Conn. 47; State *v.* Rash, 12 Iredell 382; Johnson *v.* State, 17 Ala. 618; R. *v.* Voke, R. & R. 531.

¹⁰ State *v.* Rash, 12 Iredell 382.

could be shown for the purpose of explaining the motive.¹ Acts part of the same system can also be put in evidence, and hence it has been held admissible, also, to show that on the same day the deceased was killed, and shortly before the killing, the defendant shot a third person, the transactions appearing to be one.² But it is inadmissible to prove that the defendant had been guilty of murder or of attempts to murder third parties,³ or that he had a tendency to commit the particular offence.⁴ Unless the defendant invite the issue by offering evidence of good character, evidence attacking his character cannot be received.⁵

But presumptions resting on antecedent preparations are not presumptions of law, but mere inferences of fact, as to which it is the judge's duty, not to declare a positive rule, but simply to notice the processes of reasoning by which a just conclusion may be reached. Evidence of preparation is always admissible for the prosecution; evidence to explain it is always admissible for the defence. Among the facts admissible, as affording in this way a basis of induction, are the purchasing, the collecting, the fashioning instruments of mischief, of which numerous cases are elsewhere given, and of which a familiar illustration is to be found in the admission of evidence on a trial for burglary to prove that the defendant had manufactured or procured the burglarious instrument. Under the same head fall cases where the evidence shows a repairing to the spot destined to be the scene of crime; and acts done with the view of paving the way to the guilty enterprise. For the same purpose it is admissible, on an indictment for arson, to prove a prior insurance of the property, as well as other attempts to destroy it, the object being to defraud the underwriters.⁶

Leopold Freund was tried in Moravia, in 1874, for the murder of Ernst Katcher. Freund, who was a Bohemian vagabond, with little money and no employment, saw Katscher, a rich brewer, at the railway station of Brünn, take out his pocket-book and arrange its contents. Freund had previously purchased a third-class railway ticket for the next station. In a moment, he seems to have arranged his

¹ *State v. Watkins*, 12 Conn. 47; *Johnson v. State*, 17 Ala. 618. See for authorities in cases of this class Wh. Cr. Ev., § 51.

² *Heath v. Com.*, 1 Robinson 735; Wh. Cr. Ev., § 31.

³ Wh. Cr. Ev., § 830.

⁴ *Ibid.* § 15.

⁵ *Ibid.* §§ 57 *et seq.*

⁶ Wh. Cr. Ev., § 753.

entire plan. He bought a second-class ticket for the next station, intending to get into the same carriage with Katscher, and to kill the latter when asleep. Of course he could have bought a ticket for a more distant station, and for this he had money enough; but he was unwilling to spend unnecessarily, and so he concluded that if Katscher did not fall asleep before the next station, then a second ticket for the second station could be bought, and so on until the victim could be noiselessly and unresistingly killed. Three tickets were in this way bought in succession, until at last Katscher, having fallen asleep, was attacked and his throat cut before he had time to cry out. Freund rifled his victim's pocket-book, and when the train slackened speed, leaped out of the window. It was dark; and had he acted prudently he might for a time have baffled pursuit. But cautious as were his preparations, after the murder his cunning vanished. He threw the bloody pocket-book into a field. He stopped at an inn at Kögetin, where he left his blood-stained overcoat, as well as a series of receipts addressed to Katscher. He then walked back to Prosnitz and went out to make purchases in a blood-stained shirt. But his preparations would have led to his conviction, even had he not in this reckless way left evidence of his guilt. The guard found Katscher's body alone in the carriage shortly after the murder; and the guard's attention had been previously curiously directed to Freund by his purchase, at three successive stations, of second-class tickets. The guard was therefore able accurately to describe the assassin; and he would have been detected on this evidence, even if he had not left so many marks of guilt on the path by which he fled.

In the same connection may be noticed false representations as to the state of another person's health, with the intention of preparing the relatives for the event of sudden death, and to diminish the surprise and alarm which attend its occurrence, and letters addressed to the writer by himself for the purpose of diverting suspicion.

It should be remembered, however, as Mr. Bentham reminds us, that there may be infirmative hypotheses which may make preparations apparently designed for a particular crime, consistent with innocence of that crime. Thus to adopt, with some modifications, Mr. Best's paraphrase of Mr. Bentham: The intention of the accused in doing the suspicious act is a psychological question, and may be mistaken. His intention may either have been altogether innocent, or, if criminal, directed towards a different object. (1.) Thus, a person

may be poisoned, and another, innocent of his death, may have purchased a quantity of the same poison a short time before for the purpose of destroying vermin. So predictions of approaching mischief to an individual, who is afterwards found murdered, may frequently be explained on the ground that the accused was really speaking the conviction of his own mind, without any criminal intention. Sometimes the most affectionate relatives indulge in predictions of this class in regard to a member of their family whom they would surrender their lives to save. Prophecies of death, also, are often the offspring of superstition or political prejudice. (2.) A. might purchase a sword or pistol for the purpose of fighting a duel with B., but, before the time of the meeting, the weapon might be purloined or stolen by C., in order to assassinate D. Or, to take a still broader case, A. manufactures guns in quantities to support a filibustering movement forbidden by our laws, and one of these guns is used by a purchaser to gratify private animosity. But even when preparations have been made with the intention of committing the identical offence charged, or previous attempts have been made to commit it, two things remain to be considered: (a.) The intention may have been changed or abandoned before execution. Until a deed is done, there is always a *locus pœnitentiaæ*; and the possibility of a like criminal design having been harbored and carried into execution by other persons must not be overlooked. (b.) The intention to commit the crime may have existed throughout, but the criminal may have been anticipated by others. An illustration of this is presented by the celebrated case of Jonathan Bradford. This man was an innkeeper. In the middle of the night, a guest in his house was found murdered in bed, his host standing over the bed with a dark lantern in one hand and a knife in the other. The knife and the hand which held it were both bloody, and Bradford on being thus discovered exhibited symptoms of the greatest terror. He was convicted and executed for this murder; but it afterwards appeared that it had been committed by another person, a short time before he came into the deceased's room. Bradford, however, had entered with a similar design, and the trepidation exhibited by him was imputable to his finding himself anticipated; while the blood on his hand and knife came from his having dropped the knife on the body in his perturbation.¹

§ 828. Purchasing, collecting, and fashioning instruments of mis-

¹ Wh. Cr. Ev., § 755.

chief; repairing to the spot destined to be the scene of it; acts done with the view of giving birth to productive or facilitating causes for removing obstructions in the execution of the design, or for obviating suspicion, etc., may also be put in evidence for the purpose of proving intention as well as participation in the guilty act.¹

§ 829. A remarkable instance is presented in the case of Richard Patch, who was convicted and executed in 1806, for the murder of his friend and patron, Isaac Blight. The prisoner and the deceased lived in the same house, and the latter was one evening shot while sitting in his parlor, by a pistol from an unseen hand. A strong and well connected chain of circumstantial evidence fixed Patch as the murderer, in the course of which it appeared that a few evenings before that on which the murder was committed, and while the deceased was away from home, a loaded gun or pistol had been discharged in the same room. This shot the prisoner represented at the time as fired at him; but there were strong grounds, especially from the course of the ball through the shutter, for believing that it must have been done by himself, in order to avert suspicion, and induce the deceased and his servants to suppose that assassins were prowling about the building. Of the same character is the case related by Dr. Hitzig, of a woman who, in order to prepare her friends for an intended crime, sent once a week for arsenic to the apothecaries, for the alleged purpose of killing rats. Possession of the instruments or means of offence, under circumstances of suspicion, are important facts in the judicial investigation of imputed crime. Where a man had in his possession a large quantity of counterfeit coin unaccounted for, and there was no evidence that he was the maker, the presumption is, that he had procured it with an intent to utter it. Facts of this kind become more indicative of guilty purpose, if false reasons are assigned to account for them; as, for instance, in the case of procuring poison, that it was procured to destroy vermin, which is the excuse commonly resorted to in such cases. A female convicted at the Warwick Summer Assizes, August 1831, of the murder of her uncle by poison, alleged that she had bought arsenic to poison mice, and pointed to a mouse which she said had been killed by it, whereas it was proved that the mouse had not died from poison.² To

¹ Wh. Cr. Ev., §§ 46, 764 *et seq.*

² R. v. Mary Ann Higgins. Lond. Med. Gazette, vol. ix., p. 896, and Annual Register for 1831.

this class of facts may be referred to the case of false representations, as to the state of another person's health, with the intention of preparing the connections for the event of a sudden death, and to diminish the surprise and alarm which attended its occurrence,¹ as was done by Captain Donnellan respecting Sir Theodosius Boughton.²

§ 830. It has been remarked that murderers, especially in the lower walks of life, are frequently found busy for some time previous to the act in throwing out dark hints, spreading rumors, or uttering prophecies relative to the impending fate of their intended victims.³ In the case of Susannah Holroyd, who was convicted, at the Lancaster Assizes of 1816, for the murder of her husband, her son, and the child of another person, it appeared that, about a month before committing the crime, the prisoner told the mother of the child that she had her fortune read, and that within six weeks three funerals would go from her door, namely, that of her husband, her son, and the child of the person whom she was then addressing. And so, on the trial of Zephon, in Philadelphia, in 1845, it was shown that the prisoner, who was a negro, had got an old fortune-teller in the neighborhood, of great authority among the blacks, to prophesy the death of the deceased. Great caution, however, should be used in sifting this kind of proof, particularly when the persons against whom the presumption is pointed are ignorant and superstitious, since, among such, the habit of loose talk of this nature is too prevalent to make an instance of it, when standing alone, any just ground for suspicion.

§ 831. Threats may also be put in evidence for the same purpose, when they go to show ill will from the defendant to the deceased.⁴ Thus, where the prisoner, a negro, said he intended "to lay for the deceased if he froze the next Saturday night," and where the homicide took place that night; where it was said, "I am determined to kill the man who injured me;" where the prisoner had declared, the day before the murder, that he would certainly shoot the deceased; and where the language of the defendant was, "I will split down any fellow that is saucy." Several considerations, however, have already been adverted to, which divert the applications of evidence of antecedent preparations, and which apply with equal force to this head.

¹ Wills on Circum. Ev., p. 212.

² See Gourney's Report of the Trial.

³ 1 Stark. on Ev. 465-66 (3d ed.).

⁴ Wh. Cr. Ev., §§ 756 *et seq.*

In addition to these, it is important to observe: 1st. The words supposed to be declaratory of criminal intention may have been misunderstood or misremembered. 2d. It does not necessarily follow, because a man avows an intention, or threatens to commit a crime, that such intention really existed in his mind. The words may have been uttered through bravado, or with a view of intimidating, annoying, extorting money, or other collateral objects. Thus, a man, such as Dr. Parkman, may have frequently been the object of threats or curses of this kind from irritated tenants, and yet it was from a man who used neither that his death proceeded. 3d. Another person, really desirous of committing the offence, may have profited by the occasion of the threat to avert suspicion from himself. A curious instance of this is given in the *Causes Célèbres*. A woman of bad character and violent temper, one day, in the open street, threatened a man who had done something to displease her, that she would "get his hams cut across for him." He was found dead a short time afterwards with his hams cut across. This was, of course, sufficient to excite suspicion against the female, who, according to the practice of continental tribunals at that time, was put to the torture, confessed the crime, and was executed. A person was, however, soon after taken into custody for some other offence, who confessed that he was the murderer; that, happening to be passing when the threat was uttered, he conceived the idea of committing the crime, as he knew the woman's bad character would be sure to tell against her. 4th. It must be recollect that the tendency of a threat or declaration of this nature is to frustrate its own accomplishment. By threatening a man you put him on his guard, and force him to have recourse to such means of protection as the force of the law, or any extra-judicial powers which he may have at command, may be capable of affording to him. Still, however, such threats, as observed by Mr. Bentham, "by the testimony of experience, are but too often sooner or later realized. So to the intention of producing the terror and nothing but the terror, succeed, under favor of some special opportunity, or under the spur of some fresh provocation, the intention of producing the mischief, and (in pursuance of that intention) the mischievous act."¹

II. MARKS OF VIOLENCE AND QUESTION OF SUICIDE OR HOMICIDE.

§ 832. Marks of violence, in connection with the cause of death,

¹ As to threats, see fully, Wh. Cr. Ev., §§ 756-7.

have already been considered.¹ At present they are only to be noticed in connection with the question of intent. When a wound is found to have been inflicted in a secret or concealed part, which is inaccessible in sudden and passionate conflict, and when infliction by accident is improbable, the inference is that the assault was coolly premeditated. Thus, the wounds, of which the Scotch historian tells as having been inflicted by forcing a heated iron into the fundament, could have been explained in no other way than on the hypothesis that to death was intended to be added concealment. In the same class may be enumerated the thrusting of a needle in the navel of an infant, running a sharp but slight instrument in the cavity behind the ear, dropping corrosive acids into the ear itself, and forcing molten lead down the throat through a tube.² The principle on which the presumption of intent can be drawn from such cases is, that a person acting under the impulse of passion is much less likely to inflict a skilful wound, than one whose act is the result of premeditation.³

Dr. Casper gives the following tests :—

1. The condition in life and personal surroundings of the deceased, so far as they may be likely to impel to suicide.
2. Threats or intimations on the part of the deceased that he harbored such a purpose ; he being found in a room made fast from within, &c.
3. Of far more importance, however, is an examination of the body, its position, the clothing, &c.

Where death has been produced by shooting, the following circumstances require attention :—

1. The position of the body. Many authors have advanced the opinion that when the body of a person who has been killed by shooting is found resting on the back, this fact is a sure indication of suicide, while other positions of the body indicate some previous struggle. From this Dr. Casper dissents.

¹ As to questions of suicide or homicide, see *supra*, §§ 272, 297 *et seq.*, 483, 507, 520, 535.

² Mittermaier von Beweise 402 ; Demme's Annalen des Criminalrechts, vol. iii., p. 215 ; Bauer, Theorie des Anzeigenbeweises ; Henke, Darstellung, sec. 99; Blanci de Indiciis, Venet, 1545 ; Reinhardt de eo quod circa reum ex Præsumpt. Convinc. et Cond. Just., etc. Erford 1732 ; Heinroth in Hitzig's Zeitschrift, n. 42, p. 257.

³ As to presumption from gunshot wounds, see *supra*, §§ 287 *et seq.* ; Wh. Cr. Ev., §§ 734 *et seq.*

2. Whether the weapon used be found near the dead or not is a circumstance which, according to Dr. Casper, proves nothing, since in the case of suicide the weapon may be stolen away, and in case of murder be left lying near the body in order to mislead. When the weapon is found, however, it often adds something to the probabilities of the case. As, for instance, if the weapon be old and rusty, or in very bad repair, it is not probable that such a one would be selected by a murderer for the execution of his purposes. So, too, if the weapon has exploded from being too heavily loaded, the fact would rather point to suicide, as the overcharge was probably inserted through ignorance, or else from a desire to make sure work. The ball should of course be compared with the barrel of the weapon. This is often impossible, as the ball frequently passes through the body; is sometimes mutilated, and slugs and buckshot are frequently used, which are adapted, of course, to barrels of all sizes. The matter, however, is not one of much importance, as the murderer who leaves a weapon lying by the body would be most apt to leave the identical one used.

3. The hands of the dead body, in some cases, help to solve the doubt. Where the pistol is found so firmly clenched in the hand that the fingers must be sawed off in order to get it loose, this is an infallible mark of suicide. In cases also where the fingers are thus broken, or where the skin of the hand is thus injured, these are, generally, indications of suicide, although sometimes they may point to a previous struggle with the murderer. Where the hands are blackened by powder being burnt into them, this affords a strong probability of suicide, unless there is reason to believe that the discoloration was produced at some other time, and not by the shot which caused death. This case, however, is not to be confounded with that grayish-black color sometimes given to the hands by working in metal, which latter may be washed off, while the former remains fast. It is no negative evidence against the fact of suicide that the hands should be entirely free from this discoloration. Gloves may have been worn which have afterwards been stolen from the body; or the hands may not have been directly employed in firing the weapon; and, in fact, with percussioned fire-arms, no such discoloration is apt to be received except where the instrument is awkwardly used. So, also, injuries to the hand are not apt to occur except through unskilful management, and hence, in the majority of cases of suicide, no such marks are found.

4. The direction followed by the ball, as we have seen, sometimes

furnishes important evidence in the question of suicide. In cases, for instance, where the ball is found to penetrate from behind, or to run downwards, it may often be seen that suicide cannot have been possible. If the barrel of the pistol has been placed in the mouth and then fired, the probability is strongly in favor of suicide. In the great majority of cases, however, the question must be left doubtful so far as its answer depends upon an examination of the body. See *supra*, § 771. The most that the physician can say, usually, is, that the probabilities are greater or less, as the case may be, in favor of suicide, or that there is nothing inconsistent with the fact of suicide.

5. Where the throat is cut in suicide, the wound runs commonly from left to right, although the opposite may sometimes occur. In many cases, it is impossible to trace the course of the wound, and, sometimes, to determine which, among many wounds, proved the mortal one. When none of the above-mentioned circumstances render the case in hand a plain one, the physician can only give an opinion as to the greater or less probability of suicide.¹

¹ "At an inn in France, a quarrel arose among some drovers, during which one of them was wounded with a knife on the face, hand, and upper part of the thorax, near the right clavicle. The injuries were examined and found to be superficial and slight. They were washed, and an hour afterwards he departed for his home, but the next morning was found dead, bathed in blood. Dissection was made, and the left lung and pulmonary artery were found cut. The surgeons deposed that this injury was the cause of death, and that it must have been inflicted after the superficial wound on the thorax, which was not bloody but surrounded by ecchymosis. Such proved to be the fact,—on his way home he had been robbed and murdered. Beck's Med. Jurisp. 588, 7th ed. In another case, a girl expired in convulsions while her father was in the act of chastising her for a theft; and she was believed both by himself and the bystanders, to have died of the beating. But, although there were marks of a large number of pretty severe stripes on the body, they did not appear to the medical man who saw it to be quite sufficient to cause death; and he therefore made a *post-mortem* examination, from which and other circumstances it was discovered that the girl on finding her crime detected had taken poison through fear of her father's anger." Beck's Med. Jurisp. 766, 7th ed.

"Contused wounds are rarely seen in cases of suicide, because in producing them there is not that certainty of speedily destroying life to which a self-murderer commonly looks. There are, of course, exceptions to this remark; as where for instance, a man precipitates himself from a considerable height, and is wounded by the fall. Circumstantial evidence will, however, rarely fail to clear up a case of this description. Greater difficulty may exist when life is destroyed by a contused wound, voluntarily inflicted. When persons laboring under insanity commit suicide, they often inflict upon themselves wounds of an extra-

§ 833. Whether the wound was inflicted in self-defence or otherwise; whether it was self-inflicted, or inflicted by a stranger; whether the perpetrator of the crime was an expert or otherwise—may also be deduced from the wound. And the direction of the wound may

ordinary kind—such as would, at first view, lead to a suspicion that they had been produced by the hand of a murderer; and, therefore the rules which are here laid down to distinguish homicidal from suicidal wounds, must be guardedly applied to cases of this kind.

"The extent of a wound, by which we are to understand the number and importance of the parts injured, must in these cases be always taken into consideration. It has been somewhat hastily laid down as a rule, that an extensive wound of the throat, involving all the vessels and soft parts of the neck to the spine, could not be inflicted by a suicide. Although in general, suicidal wounds of this part of the body do not reach far back, or involve the vessels of more than one side, yet we find occasionally that all the soft parts are thus completely divided. There are cases in which, perhaps with a firm hand, there is a most determined purpose of self-destruction. In a case of suicide, observed by Marc, the weapon had divided all the muscles of the neck, the windpipe, and gullet—had opened the jugular veins and both carotid arteries—and had even grazed the anterior ligaments of the spine. A wound so extensive as this, is rarely seen in a case of suicide, but there is no ground for the assertion, that such extensive wounds in the throat are incompatible with self destruction.

"*Incised* wounds in the throat are generally set down as presumptive of suicide, but murderers sometimes wound this part for the more effectual concealment of crime. Circumstances connected with the form and direction of a wound, may in such cases lead to detection, for, unless the person attacked be asleep or intoxicated, resistance is offered—evidence of which may be obtained by the presence of great irregularity in the wound, or the marks of other wounds on the hands and person of the deceased. The peculiar *form* of a wound on the throat has sometimes led to a justifiable suspicion of homicide. In one instance a man was found dead with his throat cut in the manner in which butchers are accustomed to kill sheep. This led the medical man to believe that the wound had been inflicted by a butcher. The police guided by this observation, arrested a butcher, who was subsequently tried and convicted of this act of murder. In some instances, however, it is extremely difficult to say whether the wound is homicidal or suicidal—the medical facts being equally explicable on either hypothesis. (See case by Marc, 'Ann. d'Hyg.' 1830, t. 2, p. 408; another by Devergie, Id. 414; and a third by M. Ollivier, 'Ann. d'Hyg.' 1836, t. 1, p. 324.) *Regularity* in a wound of the throat has been considered to be presumptive of suicide. This was the publicly expressed opinion of Sir Everard Home, in the well known case of Sellis. The deceased was found lying on a bed, with his throat extensively cut, and the edges of the incision were regular and even. This condition, he argued, was inconsistent with the assumption of suicide." Taylor Med. Jur., 7th Am. ed., 278. Dr. Taylor also maintains "that a murderer may readily inflict a wound which would be clean and regular."

often be shown for the purpose of testing the validity of a defence. Thus, where the defence was, that, the ground being rough and slippery, the prisoner stumbled, and both barrels of the gun had gone off by accident, the defence was confirmed by tracing the direction of the shot, which was found to be pointed upwards.¹ The difference in appearance between wounds inflicted before and after death has been already considered.²

§ 834. If, as has been said, the death was not accelerated by violence, the defendant must be acquitted. Thus, in 1847, on a trial for manslaughter, the surgeon who had attended the deceased stated, that on examining her body he had found the mark of an old wound on her head, and a slight bruise on one of her thighs; but he further stated, that he made a *post-mortem* examination of the body, and that his opinion was, that the cause of the deceased's death was confirmed consumption, her lungs being tuberculous, and that it had not been accelerated by violence, but was wholly attributable to natural causes. The defendant, under the direction of Murphy, Sergeant, who consulted with Lord Chief Baron Pollock, was acquitted.³ But it is no defence that the deceased was laboring under a mortal disease, if death was accelerated by the defendant's violence;⁴ and this, no matter how remote the cause, if the intention was to commit an assault, and death resulted.⁵

III. INSTRUMENT OF DEATH.

§ 835. The use of a lethal instrument, knowing it to be such, gives a strong inference of design, if the weapon appears to have been carried contrary to the defendant's usual custom.⁶ Whether it was the defendant's custom to carry the particular weapon, becomes in such cases, a material question. Thus, in Selfridge's case,⁷ where the fatal weapon was a pistol, the defendant was permitted to prove that he had found it necessary to carry such a weapon, in consequence of the danger of being waylaid in his passage between his place of business and his residence in the country. And in the old cases,

¹ Wh. on Homicide, § 240; Wh. on Ev., §§ 734 *et seq.*

² *Supra*, §§ 270 *et seq.*

³ R. v. Conner, 2 C. & K. 518; see also R. v. Crompton, C. & Mars. 597.

⁴ State v. Morea, 2 Ala. 275.

⁵ Whart. C. L., §§ 152 *et seq.*

⁶ See Wh. Cr. Ev., § 764.

⁷ Wh. on Hom. 2d ed. App.

such as those of Major Oneby and of Mr. Lutterel, it having been a uniform custom of those times for gentlemen to carry swords, no presumption was drawn from the fact that in these instances swords were the instruments of death. But when the weapon by which the homicide was committed was one not usually carried, the presumption is, that it was assumed for the special purpose.¹

¹ "The affirmative hypotheses affecting *motives* to commit an offence are applicable, also, to *means* and *opportunities* of committing it; and some unhappy cases show the danger of placing undue reliance on them. A female servant was charged with having murdered her mistress. No persons were in the house but the deceased and the prisoner, and the doors and windows were closed as secure as usual. The prisoner was condemned and executed, chiefly on the presumption that no one else could have had access to the house; but it afterward appeared, by the confession of one of the real murderers, that they had gained admittance into the house, which was situated in a narrow street, by means of a board thrust across the street from an upper window of an opposite house, to an upper window of that in which the deceased lived; and that having committed the murder, they retreated the same way, leaving no traces behind them. Stark. Ev. 865; Best's Ev. 572.

Upon the trial of an indictment for an illegal operation upon a woman, certain surgical instruments and a speculum chair, found in the defendant's house, were exhibited to the jury. There was evidence that the chair had been used in performing the operation, and medical experts were allowed to testify that the surgical instruments were adapted to producing abortions, although none of them could be said to be so exactly designed for such use as not to be appropriate also for use in lawful acts of surgery. It was held by the Supreme Court that the defendant had no ground of exception to the admission of this evidence. Com. v. Brown, 121 Mass. 69. To the same effect is Com. v. Blair, 126 Mass. 40.

In conformity with the view in the text, on the trial of an indictment for breaking and entering a building and stealing therefrom, it is held, that burglarious tools and implements, found together in the possession of the defendant, at the time of his arrest, may be brought into court and exhibited to the jury, although some of them only, and not the residue, are adapted to the commission of the particular offence in question. Com. v. Williams, 2 Cush. 582, 583. In a case of burglary, where the thief gained admittance into the house by opening a window with a penknife, which was broken in the attempt, and a part of the blade left sticking in the window frame, a broken knife, the fragment of which corresponded with that in the frame, was found in the pocket of the prisoner and was held proper evidence. And so evidence was received to trace the implements with which the burglary had been committed to the defendant's home. People v. Larned, 3 Selden 445.

In Ruloff's case, decided in New York, in 1871, the conviction rested in a large measure on the production of implements found in the prisoner's room, and on photographic likenesses of the deceased. The applicatory law is thus stated by Judge Allen: "Objection was made, upon the trial, to the production in evi-

§ 836. Other inferences are to be adduced from the instrument of death which it may not be out of place here to notice. Suicide may

dence of certain implements and papers found in the room and desk of the prisoner. Both the room and desk were used somewhat in common by him and one of his associates, but he was the chief occupant. The articles were taken some time after his arrest, and evidence was given tending to show that he had the key of the room, and showing how the room had been kept during his absence; and the prisoner, upon the trial, admitted the possession of one of the implements. Other evidence was given, also tending to connect the prisoner with the articles found in his room and the question of fact was properly submitted to the jury upon that question. The rachet-drill, which, it was claimed, the bits with which the entry into the store was effected fitted, the prisoner admitted on the trial had been in his possession as a new invention and a curious thing. This alone was some evidence that the articles found with the drill were there while the prisoner occupied the room and used the desk, especially with the other evidence tending to show that the room had remained locked from the time he left until the articles were found and taken away." *Ruloff v. People*, 45 N. Y. 213.

"In suicides, commonly, one wound only is seen, namely, that which has destroyed life, and the presence of several wounds on the body, or the marks of several attempts around the principal wound, have been considered to furnish presumptive evidence of murder. But any inferences of this kind must be cautiously drawn, since not only may a murderer destroy his victim by one wound, but a suicide may inflict many, or leave the marks of several attempts before he succeeds in his purpose.

"The number, situation and direction of the wounds found on a dead body may be medically inconsistent with the theory of a suicidal origin. The following case occurred in New York in September, 1839. A woman was found dead, and there were many wounds upon her body. The husband was suspected of having killed his wife, but he asserted that she had destroyed herself. This defense, however, was shown to be inconsistent with the medical facts. Three physicians who examined the body deposed that there were eleven wounds (stabs), eight on and about the left side of the thorax, one of which had penetrated the pericardium, and divided the trunk of the pulmonary artery at its origin; and the others were in the back, near the left scapula. It was considered to be quite impossible that these last-mentioned stabs could have been produced by the deceased, and there was every reason to suppose that the stabs in the front and at the back had been inflicted at the same time by an assassin. In acts of murder perpetrated by lunatics or persons laboring under delirium tremens, it is usual to find a large number of wounds on the body of the person attacked. In a case communicated to me by Dr. Procter, of York (June, 1871), a man in a fit of delirium tremens killed his wife by cutting and stabbing her. Dr. Procter found on the body of deceased fifty-six wounds, of which some were of a nature inconsistent with the theory of self-infliction. The object with such criminals is apparently not merely to kill, but to mangle the body of the victim." *Taylor's Med. Jur.*, 7th ed., 281.

be inferred from the discovery of the weapon near the body.¹ This however, is by no means a certain test. Thus, in July 1683, the Earl of Essex was found dead in the Tower, with his throat cut, and a razor lying near him. His throat was smoothly and evenly cut from one side to the other and entirely down to the vertebral column. Notwithstanding this, the razor was found to be much notched on the edge. This fact those who favored the view of suicide were asked to explain. They could do so by no other way than by supposing that the deceased had notched the razor by drawing it backwards and forwards on the neck bone. This he could hardly be deemed competent to do after all the great vessels of the neck had been divided. If the weapon be found in the vicinity of the corpse, the question arises whether it could have been placed in its position by the act of the deceased. In the case of Courvoisier, who was tried for the murder of Lord William Russell, there were two facts relied upon to show that this was not a case of suicide. One was, that a napkin was placed over the face of the deceased, and the other that the instrument of death did not lie near the body. To the same point in the case of Jane Norkott, who was found dead in her bed with her throat cut, while a bloody knife was found sticking in the floor a good distance from the bed, but as it stuck the point was turned toward the bed, and the haft from it. This last fact told strongly against the hypothesis of suicide.

On the trial of How, for the murder of Church, in Allegheny county, N. Y., in 1824, it was a material fact that a patch of square home-made linen, which was found near the deceased, being apparently a part of the wadding which was discharged, together with the ball which was the cause of death, was of the make and quality with other patches found almost simultaneously in the box of a rifle in the defendant's possession.²

¹ See *supra*, §§ 299, 795. Wh. on Cr. Ev., § 766.

² As to the question between homicidal and suicidal wounds, see §§ 297 & seq.

"At the same time, a person may have died suddenly, and a weapon or poison found near the body, and yet the death may have taken place from natural causes. Due allowance must be made for coincidences of this kind. The purchase and possession of a deadly poison shortly before a sudden death may create suspicion, but a careful analysis may show that there is no poison in the body, and further that the post-mortem appearances are consistent with natural disease—and unless treated as exceptional in character, they are no

§ 837. *Right or left handedness* may also be a question of moment when a wound is under investigation. Thus, we are reminded by Dr. Taylor,¹ many persons are ambi-dextrous, *i. e.* "have an equal facility in the use of the right and the left hand. This may not be generally known to the friends of the deceased: and such persons are often pronounced, even by those who have associated with them, to have been right-handed. A want of attention to this point is said to have been one of the circumstances which led to a suspicion of murder in the case of Sellis. Wills's Circ. Evidence, p. 97. The man was found dead on his bed with his throat cut—the razor was discovered on the left side of the bed; whereas it was generally supposed and asserted that he was right-handed. The truth was he was consistent with death from poison. Mr. Stedman, of Guilford, met with a case in which a woman was found dead under very suspicious circumstances. Within half an hour of her death she had sent a boy to a shop to purchase a packet of Battle's vermin-killer (strychnia). He gave it to her, and left the house. When he returned at the time mentioned, he found her leaning on the table, speechless and motionless. She was then dead. There was no rigidity, and no evidence of convulsions. Some fluid was found in the stomach, but in this there was no strychnia, and none of the blue coloring matter which had been sold with the powder. No trace of the powder could be found on the premises, and no cup, glass, or vessel in which the poison might have been mixed, could be seen. (Med. Times and Gaz., Jan. 14, 1865, p. 34.) The absence of any characteristic symptoms, and the non-detection of the poison and its coloring ingredient under the circumstances negatived the suspicion of poisoning. The purchase, possession and the non-discovery of the purchased packet after the death of the woman, were circumstances which created suspicion, but nothing more. The medical facts proved that the suspicion was unfounded. The state of the lungs and heart accounted for sudden death.

"Among the questions which present themselves on these occasions are the following: Is the position of a wounded body *that* one which a suicide could have assumed? Is the distance of a weapon from the body such as to render it improbable that it could have been placed there by the deceased? In answering either of these questions, it is necessary to take into consideration the extent of the wound, and the time at which it probably proved fatal. Again, it may be inquired—has the deceased bled in more places than one? Are the streams of blood all connected? Are there any marks of blood on his person or clothes, which he could not well have produced himself? Are there any projecting nails or other articles which might account for wounds on the body as the result of accident? These are questions, the answers to which may materially affect the case; hence a practitioner, in noticing and recording the circumstances involved in them, ought to exercise due caution." Taylor's Med. Jur., 7th ed. 283.

¹ Med. Jour., 7th Am. ed. 279; Com. v. Sturtivant, 117 Mass. 139.

ambi-dextrous—equally expert in the use of the razor with his left and right hand; and thus the apparently suspicious circumstance of the razor being found on his left side, was at once explained away. The importance of making due allowance for the characters presented by wounds in the throat is also illustrated by a case which occurred in London, in November 1865. A publican and his wife had been frequently in the habit of quarrelling. One night the wife gave an alarm, and the man was found dead on the bed with his throat severely cut. On examination the fatal wound had all the characters of a left-handed cut, while the deceased was generally believed to be right-handed; and there was bloody water in a wash-hand basin in the room. The wife, who had marks of bruises upon her, said that she left her husband in the bedroom for a short time, and on her return found him dead. The suspicious facts were explained at the inquest by a daughter of the deceased by a former marriage. She stated that her father had been brought up as a wood-carver, a trade which requires a man to use both hands equally well—that he had frequently threatened to destroy himself, and that the blood in the wash-hand basin was owing to her having washed her hands after she had touched her father's head. This satisfactorily explained the medical circumstances which appeared at first to point to an act of homicide."

§ 838. William Richardson was tried at Dumfries, in 1787, for the murder of a young female in the Stewarty of Kircudbright, in the autumn of 1786.¹ It appeared from the evidence that the deceased, who lived with her parents in rather a remote part of the district, was, the day in question, left alone in the cottage, her parents having gone out to their harvest-field. On their return home, a little after mid-day, they found their daughter murdered, with her throat cut in the most shocking manner. The circumstances in which she was found, the character of the deceased, and the appearance of the wound, all concurred in excluding any presumption of suicide; while the surgeons who examined the wound were satisfied that it had been inflicted by a sharp instrument, and by a person who must have held the instrument in his left hand. On opening the body, the deceased appeared to have been some months gone with child; and on examining the ground about the cottage, there were discovered the foot-steps, seemingly, of a person who had been running hastily from the cottage, and by an indirect road through a quagmire or bog, in

¹ Burnett's Criminal Law of Scotland, p. 524 *et seq.*

which there were stepping-stones. It appeared, however, that the person had, in his haste and confusion, slipped his foot and stepped into the mire, by which he must have been wet nearly to the middle of the leg. The prints of the footsteps were accurately measured, and an exact impression taken of them ; and it appeared that they were those of a person who must have worn shoes, the soles of which had been newly mended, and which, as is usual in that part of the country, had iron knobs or nails in them. There were discovered also, along the track of the footsteps, and at certain intervals, drops of blood ; and on a stile or small gateway near the cottage, and in the line of the footsteps, some marks resembling those of a hand which had been bloody.¹ A number of persons being present at the funeral, the steward depute, with a view of obtaining some clue to the murderer, called all the men together, to the number of sixty. He then caused the shoes of each of them to be taken off and measured ; and after going nearly through the whole number, they came to the shoes of the prisoner, which corresponded exactly to the impressions, in dimensions, shape of the foot, form of the sole, apparently mended, and the number and position of the knobs. (Up to this moment no suspicion had fallen on any one in particular.) The prisoner, on being questioned where he was on the day the deceased was murdered, answered, seemingly without embarrassment, that he had been all that day employed at his master's work. Some other circumstances of suspicion, however, having transpired, he was, in a few days after, taken into custody. On his examination he acknowledged that he was *left-handed* ; and, some scratches being observed on his cheek, he said he had gotten them when pulling nuts in a wood a few days before. He still adhered to what he had said of his having been, on the day of the murder, constantly at his master's work, at some distance from the place where the deceased resided ; but it appeared that he had been absent from his work about half an hour (the time being distinctly ascertained) in the course of the forenoon of that day ; that he had called at a smith's shop, under pretext of wanting something, which it did not appear that he had any occasion for, and that this shop was in his way to the cottage of the deceased. A young girl, who was some one hundred yards from the cottage, said, about the time the murder was committed (and which corresponded to the time that the prisoner

¹ As to footprints, see *infra*, § 853 ; *supra*, § 820 ; Wh. Cr. Ev., § 796.

was absent from his fellow-servants) she saw a person, exactly with his dress and appearance, running hastily towards the cottage, but did not see him return, though he might have gone round by a small eminence which would intercept him from her view, and which was the very track where the footsteps had been traced. His fellow-servants now recollect that on the forenoon of that day they were employed with the prisoner in driving their master's carts, and, when passing by a wood, which they named, the prisoner said he must run to the smith's shop, and would be back in a short time. He then left his cart under their charge, and, they having waited for him about half an hour, which one of the servants ascertained by having at the time looked at his watch, they remarked on his return that he had been longer absent than he said he would, to which he replied that he stopped in the woods to gather some nuts. They observed at this time one of his stockings wet and soiled, as if he had stepped into a puddle, on which they asked him where he had been. He said he had stepped into a marsh, the name of which he mentioned; on which one of his fellow-servants remarked that he must have been either drunk or mad if he stepped into that marsh, as there was a footpath, which went along the side of it. It then appeared, by comparing the time he was absent with the distance of the cottage from the place where he had left his fellow-servants, that he might have gone there, committed the murder, and returned to them. A search was then made for the stockings he had worn that day, and a pair were found concealed in the thatch of the apartment where he slept, and which appeared to be much soiled, and to have some drops of blood on them. The last he accounted for, at first, by saying that his nose had been bleeding some days before; but it being observed that he had worn other stockings on that day, he next said that he had assisted in bleeding a horse when he wore those stockings; but it was proved that he had not assisted, but had stood on that occasion at such a distance that no blood could have reached him.

On examining the mud or sand upon the stockings, it appeared to correspond precisely with that of the mire or puddle adjoining to the cottage, and which was of a peculiar kind, none other like it being found in the neighborhood. The shoemaker was then discovered who had mended his shoes a short time before, and he spoke distinctly to the shoes of the prisoner, which were exhibited to him, as having been those he had mended. It then came out that the prisoner

had been acquainted with the deceased, who was considered in the country as of weak intellect, and had on one occasion been seen with her in a wood under circumstances that led to a suspicion that he had criminal connection with her; and, on being gibed with having such connection with one in her situation, he seemed much ashamed and greatly hurt. It was proven further, by the person who sat next to him while the shoes were being measured, that he trembled very much, and seemed a good deal agitated; and, in the interval between that time and his being apprehended, he had been advised to fly, but his answer was, "Where can I fly to?" In the prisoner's defence, evidence was brought to show that, about the time of the murder, a boat's crew from Ireland had landed on that part of the coast, near to the dwelling of the deceased; and it was said that some of the crew might have committed the murder, though their motives for doing so it was difficult to explain, it not being alleged that robbery was their purpose, or that anything was missed from the cottages in the neighborhood. On this evidence the prisoner was convicted and executed. Before his death, he confessed that he was the murderer, and said that it was to hide his shame that he committed the deed, knowing that the girl was with child by him. He mentioned also to the clergyman who attended him where the knife would be found with which he had perpetrated the murder. It was found accordingly in the place he described (under a stone in the wall), with marks of blood upon it.¹

IV. LIABILITY OF DECEASED TO ATTACK.

1st. *Possession of Money.*

§ 839. This opens a wide range of testimony. It is admissible to prove that the deceased had received a considerable sum of ready money just before the fatal moment, and that he might be supposed to have the whole or a part of it on his person.² When the defence is passion or self-defence, evidence of this kind is always proper to prove premeditation, though it should have no effect on the jury, unless it be connected by presumption or otherwise with the defendant. If he was not likely from the circumstances to have any sus-

¹ Best on Presumptions, § 262.

² See Wh. Cr. Ev., §§ 23, 24, 758, 784; Lindsay v. People, 63 N. Y. 143; Hamby v. State, 36 Tex. 523; Sturtivant's case, App. to Wh. on Hom., 2d ed.

picion of the fact—if the opportunity of robbing the deceased was not used—if the defendant's means were such as to make the acquisition of money in such sums and at such risks out of the range of possible temptation—the fact should not be allowed to weigh. It will be seen at once that not only the deceased's condition and habits—*e. g.*, those which would show the likelihood of his having money on his person at this particular time—but those of the defendant, become thus the legitimate subjects of inquiry. So far as the *deceased* is concerned, a very strong tone is lent to this species of presumption by the fact of his being a peddler or itinerant vender of jewelry. The easy exportation of the goods of this class of persons, their usual isolation, and the readiness with which they can be enticed under business pretexts into places where they can be secretly dispatched, contribute to sharpen very much the probability that a violent homicide, of which a person of their calling was the subject, was committed for the sake of gain. On the other hand, the situation of the defendant after the guilty act is to be closely scrutinized. Was there any change in his circumstances exhibiting greater means of expenditure than before? For this purpose evidence is always admissible, showing the unexpected extinguishment of pressing debts, or increase of a bank-balance, or investments or outlay of any kind whatever.¹

¹ Wh. Cr. Ev., §§ 23, 784. A conspicuous trial in Italy, in 1881, illustrates the topic in the text. Count Alessandro Faella, of Imola in the Marches, to adopt in part the report in the Pall Mall Gazette, was in straightened circumstances, but with high social pretensions and extravagant habits. He was an intimate friend of the parish priest of Imola, Don Virgilio Costa, who possessed considerable wealth, and placed in Count Faella unbounded confidence. In the summer and autumn of 1881, Count Faella was engaged in building a villa near the Porta Bolognese. Early in August the chief work was done; even the summer-house was built, and in it there was a large well, which perplexed the rustic gardeners and workmen; but Count Faella told them it was a cistern for cooling wine. On the vigil of San Casciano he sent his steward to Venice on business, having borrowed his key of the summer-house; and he ordered different workmen to fetch him some long slender pieces of wood, a hurdle, and thirty-three sacks of rice-husks from Imola. This done, he paid them, and told them he had no further need of them for a day or two, so that he was left in the house with no one but the housemaid, Giovanni; and even her he sent out to the post in the town, for the only visitor he expected was Don Virgilio Costa. That day, the 12th of August, 1881, several people saw Don Virgilio, walking towards the Porta Bolognese, in his usual long black cassock, his cloak tucked round his arm to be out of the way, and his three-cornered

§ 840. History rather than the record of criminal courts affords examples of cases where homicide has been committed to remove from

beaver on his head. A peasant met him near Faella's villino, reading a letter or some piece of writing, very intently; and the priest had taken with him a purse known to hold important documents. From this time the priest was never seen alive. Several days afterwards, the sub-prefect of the town, Angelo Bianchi, received a very singular document, a pamphlet on locomotives, out of which selected printed words joined with those written above them in manuscript, united in a message to the effect that Don Virgilio had gone to Geneva; that he felt a call to proceed thence to the uttermost parts of the earth, preaching the gospel, and that he constituted his dear friend, Count Alessandro Faella, the sole executor of his will, for the benefit of the poor of Imola. It was alleged by Faella that the priest was largely in his debt, and that this executorship was meant as part remuneration. Suspicion, however, attaching to Faella measures were taken to search his grounds. On the 7th of October, the cistern, which had been closed up, and from which a peculiar smell had arisen, was excavated in the presence of many witnesses. The cistern was filled to the brink with earth and stones, with husks and gravel; a hurdle on one side, some long slender sticks, chiefly broken; a paving stone that Faella had bought of the municipality early in August, and lowest of all, kneeling, one hand still raised as if to keep off the pelting shower of stones, a battered corpse in a long priest's cassock, a mantle still tucked round one arm, and a three-cornered beaver hat. It was, of course, Don Virgilio Costa. From the position of the corpse it was inferred that the body could not have been thrown in by force; the hole must have been concealed by the hurdle, supported on sticks and hidden with the rice husks that strewed all the floor. And there, as the friends passed through the room, the earth must have given way under Don Virgilio, and he must then have been killed by the stones cast on him. Count Alessandro Faella was immediately imprisoned and was indicted for both forgery and murder.

Faella's defence was that while at his villa at Foligno he had received an anonymous letter telling him that the corpse of Costa had been thrown into his cistern at Imola, and that finding this to be true he had buried it there out of fear, and lest he should be considered an accomplice. He declared that some torn papers found in his basket, which corresponded with a torn page in the singular pamphlet sent to Bianchi, were not of his writing, and had been placed there with intent to do him harm. He pronounced the whole accusation an artifice to destroy him, devised by the really guilty parties, and protested that the bills of exchange presented by him as constituting a claim against the priest's estate were genuine.

The trial began on the 1st of February, 1881. The evidence for the prosecution included four experts of handwriting and one hundred and two persons of high standing in Imola and Bologna. It was proved that Faella had forged no less than twenty-three bills of exchange for very large amounts; and there was strong ground to infer that the trap which so successfully caught Don Virgilio was baited for another victim; a friend and creditor of Faella's named Alpi.

the assailant's path a party who stood between him and the consummation of his avarice or his ambition. In England, however, the

Faella to the last protested his innocence, but died, it was supposed suicidally, of poison, before the trial closed.

The following is from the London Spectator, of Jan. 19th 1884:—

"Perhaps the most interesting fact about the ghastly story reported this week from Vienna is that similar stories should be so rare in Europe. According to all the accounts forwarded, which rest, it must be remembered, on statements made by the police, there having as yet been no public inquiry and no evidence on oath, two brothers named Schenk were till recently the chiefs of an association of murderers. They are the sons of a judge in Silesia, but have been cast off for their conduct; and being ruined by drink and dissolute living, they betook themselves to crime to procure supplies. Aided by a man named Schlossarek, of whom little is recorded, and several other accomplices still more vaguely described, they pursued murder as a trade steadily and regularly, and with a kind of bourgeois persistence and meanness of design. They did not seek for great hauls, or go out on the highway as footpads, or watch the rich, but quietly hunted for feeble victims, allured them to unfrequented places, and there strangled them. Indeed, it was at first imagined that they only killed servant girls. It appears that it is usual in Vienna for respectable female servants who are tired of service, and have saved money, to advertise for husbands in the newspapers. The elder Schenk, Hugo, a married man separated from his wife, used to answer these advertisements; and being a personable fellow, who announced himself as a journeyman engineer, with a good salary and expectations, he was usually accepted. The courtship never took long, and only one of his numerous victims is known to have felt any distrust of his designs. His general plan was to ask the unfortunate woman to throw up her place, as "it would not do for him to marry a domestic servant," to bring her savings, and to meet him with them at some railway station, or other reputable place, whence they could at once go to be married. The woman on reaching the spot indicated was asked to take a walk, led to some copse or wood, and there murdered, usually with the assistance of a second man, the mode of inflicting death being strangulation. Schenk confesses to five such murders in succession, each one yielding on an average 120*l.*, but the police have traced eight; they have found evidence of his villanies far beyond Vienna, in Pesth, Presburgh and Linz, and they are aware of facts, such as his possession of valuable jewels—a string of pearls, for example—which point to victims higher in the social scale than poor servant girls. It has been proved, moreover, that the members of the gang maintained themselves and their families in a way for which the sums mentioned would not even approximately account, the total number of the murderers and those dependent on them being no less than sixteen. The Viennese police, in short, are sure that they have discovered a gang who lived luxuriously by habitual murder, perpetrated from month to month as a means of subsistence."

"Such a case is almost without precedent in the modern history of European crime. A family, usually owning an inn, has been known to take to murder, and to slaughter habitually any travelling guests; and every now and then

poisoning of Sir Theodore Broughton, in Paris, that of the family of the Marchioness Brinvilliers, and in Belgium that of Gustavus Foug-

some district on the Continent is harassed by incessant burglaries, committed by men who, if resisted, slaughter all witnesses; but we do not remember a case of a whole band pursuing murder as a regular business. The Schenks are the first Thugs who have appeared in Europe for fifty years. As a rule, almost without exception, murderers for gain work single-handed. They are afraid of accomplices, and trust for escape to disappearances which would be impossible if any large number were employed. We can hardly remember an instance in England of even two persons being united for such a crime since the days of Burke and Hare; and in that case the original intention was not murder, indeed only one person was murdered, and one of the accomplices turned King's evidence. The criminal class seems to shrink instinctively from such combinations, and it is a little difficult to imagine why. It is not that they are unable to form combinations, for they do form them; gangs of foot-pads, burglars and brigands having been unearthed by the police in almost all countries. It was said even, we do not know with what truth, that in the earlier days of the crime the garroters formed a society, and that it was the breaking-up of this gang, and not the infliction of the lash, which led to that sudden diminution of the offence which has provided the advocates of the lash with a stock argument ever since. Nor is the deterring cause the nature of the crime itself, for associations organized for murder for other ends than gain have always existed and exist still. Carey belonged to one of them, and so do all members of the Russian Terrorist Committee. Brigands, too, in all countries, though murder is not their object, on occasion accept murder as a necessity incident to their vocation, without which the ransoms they seek would often not be paid. In scores of instances, too, single, and so to speak, accidental murders have been committed by temporary associates, as in the recent case of the Hungarian judge, Majlath. True Thuggee, however, murder by association for the sake of gain and as a trade, is very rare in Europe, or, indeed, almost unknown. Yet the Schenk case proves that its existence is possible, and that the crime is not attended with much danger, the Viennese gang having lived in luxury for many months. Indeed, they might have gone on for years, but that the younger Schenk, grown rash in his impunity, instead of inducing a servant-girl to entrust him with her hoard, robbed her after death of her bank-book, and produced it at the post-office, to obtain her money. But for this, though the disappearances had attracted attention, and the police suspected murder, they might not for a long period have obtained a clue to individuals.

"We suppose there are three reasons which forbid the rise of Thuggee in Europe to anything like the position of a well-known crime. One is, we hope, a certain superiority in the European conscience. The Thug's conscience, though, as all superintendents of the department have reported it, is alive and even keen in other directions, is deadened as to murder by the influence of a diabolical creed. It seems past question that a Thug, while he never asserts that murder is right, and frequently becomes exceedingly ashamed of his trade, never feels remorse, but he does feel shame, is honestly under the belief that

nies, are conspicuous examples of the judicial punishment of homicid committed for the purpose of removing an obstacle in the way of an inheritance. And so frequently in that corrupt state of society which preceded the French Revolution was this method of diverting the channel of inheritance resorted to, that a specific under the name of the "Succession Powder" disputed with the "Aqua Tophana" the credit of being the most effectual remedy for this purpose. The inventress of the last-named agent was said to have poisoned six hundred persons, and in Paris at the close of the seventeenth century.

Bhowani approves slaughter, and regards the victim as an acceptable sacrifice. No Thug can, we believe, be found, among the hundreds who have confessed who ever committed murder without seeing the 'signs' which show that the goddess is propitious; nor has inquiry ever revealed a case in which a European who would of necessity be an unclean sacrifice, has been put to death by Thugs. Bad white men never take to these creeds; their consciences remain less deadened, and it would be difficult, therefore, for a European desperado to find many men with the requisite and separate callousness. Even criminals, as a rule though capable of killing in order to escape, shrink from deliberate murder in cold-blood, and especially murder in which the victim must be systematically deceived, as a passenger, for instance, is not when he is pitched into the Seine or off the Thames embankment. Another reason is the dread of betrayal, murder differing from all crimes in this—that the criminals will accept any sentence, if only their lives may be spared; while governments have a habit scarcely defensible on moral grounds, of sparing any witness not actually engaged in the killing work. The criminals have, therefore, an unusual and overwhelming reason for giving evidence, and almost invariably they do it; & invariably that associations for political murder have always found it necessary to inflict on 'traitors' the death they have made confessions to avoid. But the main reason, we greatly fear, which protects European society from this especial danger, a rise of Thuggee, is the powerlessness of numbers to increase gain. Thugs must travel in numbers, because they require decoys, videttes, and defenders against attack: while brigands could not carry out their purposes alone but murderers are as successful and more safe in solitude, or, at least, in parties of two. It does not appear, for example, that Schenk needed associates at all or often used them; while he always felt the annoyance of sharing his plunder and was in consequence called by his associates mean. In forming or joining a band, therefore, he reduced his gains, increased his chances of betrayal, and rendered it infinitely difficult for himself ever to quit the criminal life, as he probably, in some dim way, hoped now and again to do. At least he has, even since his arrest, betrayed an abject degree of fear, which suggests that at no time can he have been totally free of terrible apprehension, that his callousness was hard-heartedness, and not courage. The cruel are not always cowards—that is an assumption contradicted by the whole history of piracy—but they very often are."

the practice increased to so alarming an extent that it was necessary to establish an inquisitorial court, called the "Chambre Ardente," for the purpose of watching and acting upon the use of poisons as a social element. By this court two women, named La Vagren and La Voison, were sentenced to be burned alive in 1780; and the sentence was executed. The perfumer of Catharine de Medicis had the reputation of being able to convey poisons through a variety of vehicles, as a jelly or the smell of a rose. To the efficacy of slow poison we have the testimony, also, of Plutarch, Theophrastus, Livy, Tacitus, and Aulus Gellius. That the modern belief was not peculiar to France, nor consequent upon the revelations of the Chambre Ardente, is proved by the fact that it was received in England at the time of Somerset's trial by both sides of that great politico-judicial struggle. Shakspeare thus recognises the general currency which the opinion had obtained:

"Their great guilt,
Like poisons given to work a great time after,
Now 'gins to bite the spirits."—*Tempest*, Act iii., s. 3.

§ 841. But, however well founded may have been the then popular belief, it is clear that if the art ever existed it is now lost. Mr. Amos, whose authority in this branch of medical jurisprudence rests on the most elaborate research, tells us that "it may now be doubted if a medical man could indicate with certainty any poisonous preparation of which the effect should be fatal, but should nevertheless be suspended for two months or even a week. And perhaps good scientific testimony could be produced, negativing the quality of being a slow poison to any of Franklin's drugs, unless, indeed, they be repeated in slow doses for a considerable period."¹

§ 842. When poisoning for the purpose of removing a party who stands in the way of success, is alleged, all facts tending to explain the motive are relevant.²

2d. *Old Grudge.*

§ 843. No matter what may be the intermediate provocations, if a *prior* intent to kill exist, that intent may be inferred to continue down to the fatal blow, but this inference is one of psychological, not juridical, law, and varies with the circumstances of each particular

¹ Great Oyer, 347.

² Wh. Cr. Ev. § 37.

case.¹ If there has been time for cooling, the prior provocation on goes to prove an old grudge, and to make in cases of homicide apparently deliberate, the offence murder. Thus in Major Oneby case—which is the leading one under this head, and has been already cited²—the evidence was that the prisoner being in company with the deceased and three other persons at a tavern, in a friendly manner after some time, began playing at hazard; when Rich, one of the company, asked if any one would set him three half-crowns; whereupon the deceased, in a jocular manner, laid down three half-pence telling Rich he had set him three pieces; and the prisoner at the same time set Rich three half-crowns, and lost them to him. Immediately after which, in an angry manner, he turned about to the deceased, and said, it was an impertinent thing to set half-pence, as that he was an impertinent puppy for so doing, to which the deceased answered, whoever called him so was a rascal. Thereupon the prisoner took up a bottle, and with great force threw it at the deceased head, but did not hit him, the bottle only brushing some of the powder out of his hair. The deceased in return immediately tossed a candlestick or bottle at the prisoner, which missed him; upon which they both rose up to fetch their swords, which then hung up in the room, and the deceased drew his sword; but the prisoner was prevented from drawing his by the company. The deceased thereupon threw away his sword; and the company interposing, they sat down again for the space of an hour. At the expiration of that time the deceased said to the prisoner, "We have had hot words, but you were the aggressor; but I think we may pass it over;" and at the same time offered his hand to the prisoner, who made answer, "No damn you, I will have your blood." After which, the reckoning being paid, all the company, except the prisoner, went out of the room to go home; and he called to the deceased, saying, "Youn man! come back; I have something to say to you;" whereupon the deceased returned into the room, and the door was closed, and the rest of the company excluded; but they heard a clashing of swords and the prisoner gave the deceased the mortal wound. It was also found, that at the breaking up of the company the prisoner had his great coat thrown over his shoulders, and that he received three

¹ Wh. Cr. Ev., §§ 734 *et seq.*

² This case is reported in 2 Ld. Ray. 1490, and is discussed in Wh. Cr. Law 8th ed., §§ 476, 480.

slight wounds in the fight; and that the deceased, being asked upon his death-bed, whether he received his wound in a manner among swordsmen called fair, answered, "I think I did." It was further found that, from the throwing of the bottle, there was no reconciliation between the prisoner and the deceased. Upon these facts all the judges were of opinion that the prisoner was guilty of murder; he having acted upon malice and deliberation, and not from sudden passion. It should probably be taken, upon the facts found in the verdict and the argument of the Chief Justice, that, after the door had been shut, the parties were upon an equal footing in point of preparation before the fight began in which the mortal wound was given. The main point then on which the judgment turned, and so declared to be, was the evidence of *express malice*, after the interposition of the company, and the parties had all sat down again for an hour. Under these circumstances the court were of opinion that the prisoner had had reasonable time for cooling; after which, upon an offer of reconciliation from the deceased, he had made use of that bitter and deliberate expression, that he would have his blood. And again, the prisoner remaining in the room after the rest of the company retired, and calling back the deceased by the contemptuous appellation of young man, under pretence of having something to say to him, altogether showed such strong proof of deliberation and coolness as precluded the presumption of passion having continued down to the time of the mortal stroke. Though even that would not have availed the prisoner under the circumstances; for it must have been implied, according to Mawgridge's case, that he acted upon malice; having in the first instance, before any provocation received, and without warning or giving time for preparation on the part of Mr. Gower, made a deadly assault upon him.

When there is difficulty in ascertaining the probable perpetrator of a homicide, it is desirable, therefore, to consider who there is who had an old grief or cause of provocation against the deceased. For this purpose evidence of threats and hostile declarations is always admissible on trial.

3d. *Jealousy.*

§ 844. Upon this head, as well as the last, it is not within the province of this work to enter. It is sufficient here to remark, that

in inquiring for the supposed agent in a homicide, motives of this class are always a proper topic of investigation.¹

V. POSITION OF DECEASED.²

§ 845. That the deceased was found tied is not always a certain ground for assuming that he was the victim of a violent homicide, for cases exist where a party intending suicide has attempted in this way to relieve his memory from the disgrace of self-murder. This, however, is very difficult to effect, and the disguise is readily penetrated. It is far different, however, with the converse, where the perpetrator of a violent homicide endeavors to so arrange the position of the deceased, as to give it the appearance of a *felo de se*. Cases of this kind are numerous, and sometimes the artifice has been so skilfully contrived as for a while to avert the current of suspicion. Thus, in a case in Mississippi, the deceased was found lying dead with his own pistol in his hand, with which the fatal shot had undoubtedly been fired, and with his body arranged in such a way as to be entirely consistent with the hypothesis of deliberate self-destruction. No question, indeed, as to this being the fact existed, until it was subsequently accidentally discovered that the pistol had been wadded with a piece of paper which was a fragment of a sheet in the defendant's pocket. So, also, on the trial of a German named Papenberg, in Philadelphia in 1844, it appeared that the deceased was found with a hatchet lying by his side, with the sharp edge of which his throat had been cut, in a manner which made the hypothesis of suicide not improbable. One of the most powerful circumstances in dispelling this hypothesis, and in pointing to the real offender, was the discovery in the pocket of the latter of a handkerchief, in which was marked in blood the profile of the precise weapon with which the wound was effected. In the case of Courvoisier, who was tried for the murder of Sir Wm. Russel suicide, as has already been mentioned, was set up as a defence, with much show of evidence; but two facts were successfully relied on by the prosecution to rebut it, viz., that a napkin was placed over the deceased's face, and that the instrument of death did not lie near the body. And so Mr. Amos tells us of a trial where the defence of suicide was defeated by the fact, that, while medical observation showed

¹ See as to jealousy, Wh. Cr. Ev., § 851; as to adequacy of motive, Wh. C. Ev., §§ 119, 120.

² See *supra*, §§ 297, 302, 796; as to position in hanging, see *supra*, § 508.

that prussic acid produces *instantaneous* death, the deceased was found with a *corked* bottle in her hand, from which five *drachms* of that particular poison had been taken, and with the bedclothes composed about her person with elaborate precision.¹

§ 846. Other points are to be noticed in the same connection. Thus, it is important to examine whether there are marks of a scuffle about the deceased, and what footsteps are noticed leading to or from the *locus in quo*, together with their dimensions and other peculiarities.²

VI. MATERIALS APPROPRIATE TO BE CONVERTED INTO INSTRUMENTS OF CRIME.

§ 847. It is here that what the German jurists call *indicatory* evidence comes into great play. No *deliberate* homicide is committed without preparation, and the more malignantly contrived is the act, the more—such are the sanctions of society—it exposes itself to detection, by the discovery of the trains laid by it for the purpose of effecting the guilty purpose. Thus, in *poisoning*, it is necessary that the poison should have been pre-procured, either in its rudimental or its complete shape. For this purpose it is admissible to show not only, as in Sir Theodore Broughton's case, the possession of the fatal drug, but its purchase, or the purchase of its component elements. Inquiries, also, as to the effect of that particular drug—possession of books in which the nature of poison is described—become pertinent, for, unless the defendant is a scientific man, he must necessarily fortify himself with information before he attempts anything so hazardous as placing in the die both the life of another and of himself. When a gunshot wound is the cause of death, premeditation as well as identity may be determined in the same way. Of course, when fire-arms are habitually used, the possession of powder is of no moment in this respect. But the use of a particular fragment of wadding has often been the means of insuring conviction; and when a party is not in the habit of carrying fire-arms, but assumes them for a particular occasion, this, as has already been noticed, lends a strong presumption of design, if it does not form part of a chain of circumstances indicating the guilty party. The species of preparation which most often leads to the discovery of the offender, in this class of homicide—particularly

¹ See *supra*, §§ 297 *et seq.* 806, for discussions of suicidal or homicidal presumptions; and see Wh. Cr. Ev., § 781.

² See *infra*, § 853; *supra*, § 838; Wh. Cr. Ev., § 796.

among those with whom the carrying of fire-arms is habitual—is selection or arrangement of a lair or shooting stand, from which victim can be shot down without arresting the suspicion of himself the observation of others. In a case in South Carolina, the trace by which identity could be pursued was that arising from construction, by the assassin, of a shed or cover made of boughs trees, from which the deceased was shot at. Similar to this, was the discovery of a level in a darkened room in a private house, upon which an air-gun had been poised for the purpose of taking a more secure aim. The more artful and skilful is the method of death chosen, the more conclusive is the presumption it affords when discovered. Thus in the traditional homicide of Amy Robsart, the fact which defeat the hypothesis of suicide was, that the planks which had been taken up from the floor for the purpose of opening a pit-fall, were so artificially cut out as to enable them afterwards, had it been necessary, be returned to their former places without the appearance of having been disturbed. Hitzig, also, mentions a case where suspicion of projected homicide, by poisoning, was attempted to be warded off by prior announcement of a tendency to symptoms, on the part of the intended patient, of the same general character as those which the poison was likely to produce. And nothing added such point as emphasis to the evidence of design in the Webster case, as the presumption existing, that the defendant had prepared beforehand the means of disposing of the deceased's body.

Great care, however, should be exercised in conducting examinations for the purpose of testing how under given circumstances the particular result could have been produced. When the examinations are carelessly and inartificially carried on, their results should be rejected by the court. A strict rein, also, should be placed on experiments carried on during the trial for the purpose of testing the adequacy of supposed agencies. Unless thus guarded, such experiments are apt both to cumber the issue and to mislead the jurors. Take, for instance, illustrating this, the following statement of certain "experiments made before the jury in a homicide case in Illinois:—

"The door was placed against the shutters in the rear of the judge's bench, and the experiment commenced.

"1. A hole was bored in the head and tyle of the door, and two-inch screw screwed in. Wheaton, a jurymen, hung to it, and held.

“2. An inch and a half screw was then used with the same effect.

“3. The juryman stepped off the chair, and the screw gave.

“4. The juryman stepped off the chair, the rope slipped, and the screw was pulled nearly out.

“5. A hook, size of smaller one found in the room, used, and did not give.

“6. Another screw, of same size, used with same effect.

“7. Experiment on last hook ; did not give.

“8. Experiment on plain one and a half inch screw ; did not give.

“9. Same experiment with same effect.

“10. Tried by prosecution, on a hook similar to the one used in No. 5 hook ; the whole broke.

“11. By defence, one of the hooks found in Jumpertz’s room ; did not give.

“12. By prosecution, on same hook in a different place ; hook was bent down.

“13. With the same hook ; juror stepped from the chair, and hook pulled out.

“14. A two-inch screw used and when juror stepped from the chair, it was nearly pulled out.

“15. A screw found in the room was then used, and when the juror stepped off from the chair, it remained firm.”¹

The Supreme Court said they did not “approve” of such “exhibition” and “experiments,” but at the same time intimated that in themselves they were not ground for a new trial.

VII. DETACHED CIRCUMJACENT BODIES.²

§ 848. Was the deceased’s dress torn, his pockets rifled, or were there any traces left by the supposed murderer on the spot ? The more artful the design, the more emphatic, as has already been noticed, is the presumption to be drawn from it. Thus, in a case in New Jersey, suspicion was for some time averted by the fact that all the horse-tracks led to the spot, and *none* from it. This, however, tended only to clinch the fact of the defendant’s guilt, when it was discovered

¹ *Jumpertz v. People*, 21 Ill. 375. See as to inferences of this class, Wh. Cr. Ev., §§ 311 *et seq.*

² See on this topic, Wh. Cr. Ev., §§ 797 *et seq.*

that the horse which he had ridden that night bore on its hoofs the marks of the shoes having been nailed on *backwards*. So, also, where leaves were used for the purpose of concealing foot-tracks to and from the spot, the presumption against the accused party was certainly not *weakened* by the discovery that the leaves were none of them taken from a level above that which he could conveniently reach, he being, in fact, much below the average height. In a case cited by Taylor,¹ there were two cuts in a shirt produced in evidence. These cuts were near each other, and precisely similar; leading to the inference that the knife producing them went through two folds of the shirt. From, this, however, it followed that the shirt could not have been on the deceased at the time of the wounding, since if it had been there would have been *three* not *two* cuts. So, on the trial of Stokes for the murder of Fisk, in 1873, the condition of the deceased's cloak, immediately after the wound, was admitted to show the force and direction of the shot. The lay of blood-stains, also, may indicate the direction in which the blood flowed. Nor is it necessary, it has been ruled, that the garments in question should be themselves produced. Their condition can be described by witnesses without such production, if their non-production is satisfactorily explained. But if practicable they should be secured and brought into court, though before admitting them there should be evidence that they have not been tampered with since the commission of the crime.²

¹ Taylor's Med. Jur., p. 274.

² In Ram on Facts (3 Am. ed. 286), is the following sketch of Mr. I. C. Spencer's speech on the trial of How, charged with the murder of Church:—

"Gentlemen," said he, "were you on the shore of a river or lake, where a vessel was moored which you wished to draw to some particular point or which you wished to fasten so that it would not float away, and you possessed numerous small cords of sufficient length to reach the boat, you would not attempt to hold it by a single cord; you would rather twist and combine them into one large and strong rope, which you would attach to the vessel, make it fast to the land and then you would hold it beyond the power of wind and waves. So with the circumstances in this case; I shall form a rope or cable out of these circumstances, remotely connected as they appear to be, by which I will connect the accused with this dreadful tragedy, as its dark and malignant perpetrator." * * * With the skill of a master builder, he matched each separate circumstance with another; step by step he followed How, through the fatal night of the 23d of December, from Angelica to his own house, where he seized his rifle and from thence to the house of Church. "Thus gentlemen," he continued, "the prisoner at the bar, was the almost invisible horseman who passed the house

§ 849. Another illustration may be found in a case, already noticed, of a woman tried in England, in 1818, before Mr. Baron Garrow, for arson. She had been met near certain ricks she was charged with burning, about two hours before midnight. On one of the ricks was found a piece of woman's handkerchief, and in a tinder-box near the spot were some unburnt cotton rags. On examining the cotton taken from the latter, with a lens, it was proved to be of the same fabric and pattern as some pieces of stuff taken from the prisoner's box at her lodgings. Another link was supplied by the comparison of a half-handkerchief taken from a bundle belonging to the prisoner with the piece found in the rick. A critical examination by experts of the two showed that they belonged to the same square. It appeared also, that the hemming in each was of the same breadth—the stitching in each was of the same degree of evenness—and that each was sewed with black sewing-silk, which was the more remarkable from the fact that articles of that character were usually sewed in cotton. Now, although these circumstances would have been insufficient to warrant a conviction without proof of guilt *aliunde*, they were held admissible as part of a net-work of facts. And as the burden of proof is on the prosecution, if it neglects to examine facts like these, the presumption is, that, if they had been examined, they would have told against it. In this view, as well as to promote public justice generally, their investigation is a matter of duty.

§ 850. In a trial in Philadelphia, in 1844—already mentioned under another head—a handkerchief found on the defendant's person was discovered to be marked with a profile of a hatchet with which the fatal wound had been inflicted. The hatchet itself was peculiarly notched, and a critical analysis showed the marks on the handkerchief to be blood. Other circumstances conspired with this to make

where the woman was watching her sick child; it was him who called the murdered man from his bed and slew him at his own door. It was he who rode with the speed of the wind by the house where lay the sick child. This is plainly told by the prisoner's horse being found in the morning covered with sweat and foot-weary; by the fatal ball fitting the rifle of the accused; the patch found near the murdered victim comparing with those in the box in the rifle; the hair of the horse adhering to the lock of the gun; the bitter hatred, the threat of vengeance. These, gentlemen, with other circumstances, form the rope, the chain, the strength of circumstantial evidence founded on the common features of humah character, and of the motive, passion and feelings, by which the mind is usually influenced." How was convicted and executed.

the presumption irresistible that the defendant was the guilty agent.¹

§ 851. The piecing together of the wadding of a pistol with paper or other material found in a suspected party's possession, is a well known method of identification.² It should be observed, however, that this is a species of identification very easily fabricated, as illustrated by the case of Boynton, in Mississippi, where a scrap of paper from which the wadding was cut, was purposely put in the defendant's pocket in order to inculpate him.

§ 852. In 1836, a Spaniard, named Palayo, was charged with attempting the life of an officer in the post-office, by depositing in packets filled with fulminating powder, one of which exploded while in the act of being stamped, causing thereby serious personal injury. The letters, which were in Spanish, and one of them subscribed with the prisoner's name, were addressed to persons in Havana and Matanzas, who appeared to have been the object of the writer's especial malignity. Evidence that the defendant was on the spot, mailing letters, at the particular time, was held to be materially corroborated by proof that the impression on the wax with which the letters were sealed corresponded with that of a seal worn about the defendant's person.³

§ 853. Footprints, whether of man or beast, as has been already seen, lead often in like manner to discovery of the guilty agent. In a case already referred to, which occurred in New Jersey, in 1820, it appeared that the defendant, who was charged with arson, had turned his horse's shoes round, after arriving at the house to be fired, so that there should appear to be two persons proceeding to and from it. This very artifice, however, was the means of his detection, since the reversal of the shoes, as indicated by the recent marks of the nails on the horse's feet, afforded one of the most emphatic of the indications by which the defendant's guilt was determined.⁴ But proof of similarity of footprints alone does not fix identity.⁵

¹ As to dress, see *supra*, § 633; as to hair, *supra*, § 681; as to teeth, *supra* § 630.

² 1 Starkie's Law of Ev. 490; Bentham's Jud. Ev., Book v., ch. xv. 256 Wills' Circum. Ev. 97. As to wadding see *supra*, § 294.

³ *Supra*, § 673.

⁴ Wills Circum. Ev. 99.

⁵ See *supra*, §§ 671, 673, 838.

⁶ R. v. Britton, 1 F. & F. 354. On this topic, see *supra*, § 297; Wh. Cr. Ev. § 796. As to inspection in such cases, see Wh. Cr. Ev., §§ 311 *et seq.*

§ 854. "It is of the utmost importance," says Mr. Best, "to examine minutely for the traces of another person at the scene of death, for it is by no means an uncommon practice with murderers to dispose of the bodies of their victims in such a manner as to lead to a supposition of suicide or death from natural causes;¹ while, on the other hand, persons about to commit suicide, but solicitous to preserve their reputation after death, or their property from forfeiture, sometimes make away with themselves in such a manner as to avert suspicion of the mode by which they came to their end.² In one case, where a female was found dead in a room; with her throat cut and a large quantity of blood on her person and on the floor, the presence of another person in that room was demonstrated by the print of a bloody *left* hand on the *left* arm of the deceased.³ Where a man was found dead, with a discharged pistol lying beside him, the hypothesis of suicide from that pistol was rebutted by showing that the fatal bullet was too large to fit it.⁴

§ 855. The following case strongly illustrates the difficulties which sometimes attend investigations of this nature. A man, on detecting his wife in the act of adultery, fell into a state of distraction, and having at first dashed his head several times against the wall, then struck himself violently and repeatedly on the forehead with a cleaver, until he fell dead from a great number of wounds. All this was done in the presence of several witnesses. But suppose it had been otherwise, and that the dead body had been found with these marks of violence upon it, murder would have at least been suspected.⁵ And even where there is the clearest proof of the infliction of wounds, still death may have been the result of previous disease, or violence from some other source. Cases illustrative of the former of these are numerous,⁶ and the two following show the necessity of not overlooking the latter hypothesis.

¹ 1 Stark. Ev. 572.

² Ibid. 577.

³ Case of Mary Norket and others, 14 Ho. St. Tr. 1324.

⁴ Theory of Presumptive Proof, App. Case, 2d sec. Also Beck's Med. Juris. 591-2.

⁵ Beck's Med. Jur. 662.

⁶ Several instances of this will be found in Beck's Med. Jur., ch. xv. (7th ed.) entitled "Wounds on the Living Body." In Ram on Facts (3d Am. ed. 114), is given the following from the Cincinnati Enquirer of August 8, 1870:—

"Two physicians, Dr. B. and Dr. W., entered the Metropolitan Bath-house on Sycamore above Fourth street, at a late hour, a night or two ago, and asked

§ 856. One of the most remarkable cases of conviction on this species of evidence, is that of George W. Carawan, a deposed Baptist preacher, who was tried and convicted in Beaufort county, North Carolina, in the fall of 1853, for the murder of Clement H. Lassiter. Carawan was a man of great natural force of character, as well as of ingenuity and courage, but was destitute of any further education than he had picked up in mature years; and was sensual, passionate and unscrupulous. He lived in a section of the country which is peculiarly destitute of the means of instruction, either moral or intellectual. In one district where he had property, and which he occasionally made his residence—an island in Beaufort county—he acquired such a control over his neighbors as to enable him for some time to defy the attempts of the law to secure his arrest. He was over fifty years of age when the murder for which he was tried took place, and had recently married a second wife, almost immediately upon the death of the first, whose end the subsequent developments showed he had at least hastened. Lassiter, the deceased, was a young man of mild disposition, who had been for some time engaged in the neighborhood as a schoolteacher, and who had been employed in

for a double bath, which was given them. One of the two, Dr. W., disrobed immediately, and during a merry conversation, leaped laughingly into the tub, inhaling a quantity of water, which strangled him at once. He threw up his hands and made every effort to regain his suspended breath, but to no purpose. He suffered immensely, and struggled until he grew livid. His fate seemed inevitable and Dr. B., paralyzed with terror, stood by his side and waited for the moment that death would come to his friend's relief.

' "Suddenly a thought struck Dr. B., and reason began to act.. He knew that men had been saved from choking by blows upon the back, and in a moment he struck his companion, who, with protruding eyes and livid face, was undergoing all the horrors of strangulation, a heavy blow between the shoulders.

"Dr. W., threw up the water, and was relieved at once; but so exhausted was he by the terrible scene through which he had passed that he sank helpless into the tub, and would have been drowned but for Dr. B., who lifted him up in his arms and supported him until his strength was partially restored.

"It was a narrow escape, indeed. Had Dr. W. remained ten seconds longer in his then condition, he would have been beyond the power or hope of restoration. Had he died there by strangulation, in what a position would his demise have placed Dr. B., who had insisted at the 'Metropolitan' upon a double bath, and urged his friend, who appeared indifferent to the matter, before the negroes, to yield to his proposition! No noise would have been made by the horrid mode of dying, and the first known of the casualty would have been the announcement of Dr. B., that Dr. W. was dead.'

the defendant's house in that capacity. When he was residing there the defendant threw out intimations of jealousy as to an intimacy between his wife and Lassiter, though, as the evidence subsequently showed, without any real ground. It appeared that previous to the death of Lassiter the prisoner had made threats as to him, and that the deceased entertained fears that he would fall a victim to these threats. On Sunday, the 14th of November, the deceased stayed all night at the house of a man named Dorset Mason, with whom he had been boarding, and spoke of his intention to go on the next day out on the turnpike road to Mattamuskeet Lake to get a school, expressing his fears of the prisoner, and speaking of getting some one to go with him. He left Mason's the next morning, with his carpet-bag, and went to the house of Thomas Bridgman, a neighbor of Carawan, where he dined. After dinner he took his carpet-bag and started on up the road, passing Carawan's house about two o'clock. Carawan was then in the yard, and just before Lassiter appeared went into the house, which was a short distance only from the road, and from which he had an unobstructed view of any and all who might be passing. Lassiter stopped at one or two neighbors, and then passed on along the road towards the lake, and was seen no more alive. Carawan was in his house a short time only after the deceased passed; he then left and went direct across his field and pasture to the woods on the back of his farm, and was soon followed by his wife to the same point, with a double-barrelled gun concealed under her apron. The wife returned shortly to the house without the gun. Carawan disappeared in the woods, and is supposed to have hastened through the woods to a place beside the road, where the murder was committed. Not a great while after Lassiter had gone upon the road a gun was fired in that direction, at quite a distance. Carawan returned to his house at sundown, without his gun. The place was an appropriate one for the perpetration of such a crime, and one likely to be selected. In a few days the non-arrival of Lassiter at his appointment on the lake began to awaken attention. It was ascertained that he had gone that way on Monday. Suspicion began to be excited. His friends became alarmed. It was noised about that he had been murdered. Inquiries were set on foot in all directions, and on Friday a general search was commenced on both sides of the turnpike-road. While the inquiries were going on, the prisoner manifested great interest in the result of them, and made efforts to divert these inquiries into a different chan-

nel, suggesting to one of his friends the probability that Lassiter had run away, before this friend had heard that the deceased was missing. The remarkable fact then was developed that Lassiter's dead body had been carried off a long distance from the road, into a dense and almost impenetrable thicket, and there, beneath the mossy turf of a low bottom, so carefully and adroitly concealed that it seemed impossible that any human search could ever discover its hiding-place.

Two men, on Saturday afternoon, after a long and tedious search which they were about to abandon as hopeless, were led to this place, but how, they could not tell. No mound was there, or footprints, and the moss was smooth and level all alike. A few lumps of dirt, less than a handful in all, and a decaying limb of laurel that had been overturned, were the sole circumjacent indications. There these men found the body, riddled with shot and bullets, crammed into a hole upon its face, the elbows sticking up, and trampled on, and covered with turf. Though Carawan took no part in the search, yet he betrayed his interest during its progress, inquiring where and how far it had been made, and where next they proposed to look. And as soon as the result was announced to him, he prepared a budget of clothes and escaped; declaring, as he went, to his nephew and his servant, "Boys, I must go away, or I shall be hung." He told his nephew, that, if he would tell the people that he was home all day Monday, he would give him the best negro that he had. Some time afterwards he returned to his home by stealth, at night, and surrendered himself to the officers of the law only when he discovered that it was useless longer to hold out. After his arrest, and during his imprisonment, the evidence showed that he was uneasy about the witness whom he had tried to purchase with a bribe, and making further efforts to hire him to leave; in default of this, to get others to get rid of him, "by hook or by crook."

§ 857. The defendant was convicted; but scarcely had the jury returned their verdict, when he drew from his breast a single-barrelled pistol, rose from his seat in a half sitting posture, leaned forward, and, thrusting his arm between two attendants, took deliberate aim at Mr. Warren, one of the counsel engaged in prosecuting for the state, and fired. The ball struck just above the heart, and, passing through the lapel of his coat, and cutting the cloth on the breast, struck the padding, and fell to the floor. He then dropped this pistol, and, instantly taking another, applied it to his own forehead. One of the officers,

observing the movement, seized his arm and pulled it down to the railing of the box, but could get it no further. During this struggle, the prisoner, with great coolness, leaned his head against the muzzle of the pistol and fired, the ball entering the right side of the skull, considerably behind and somewhat above the ear, and traversing the brain until it lodged just over the right eye. He then dropped on his seat senseless, and died shortly afterwards.

Akin to this are the results of recent extraordinary exertion on horses used by defendants, a point which is worthy of consideration, when it was necessary that some distance should have been rapidly travelled in order to enable the suspected party to pass from the spot where the crime was committed to his place of retirement. This is illustrated in the trial of How, who was convicted in Alleghany county, N. Y., in 1824, for the murder of Othello Church.¹ The prisoner's house here was some distance from the deceased's, and there were several circumstances (*e. g.* old grudge, etc.) which indicated the defendant as a likely party to have committed the murder. Immediately upon the alarm being given, two of the neighbors took sleighs, the snow being on the ground, and proceeded at once to the defendant's house. The defendant was at home, and nothing particular about his appearance or dress was discoverable. On proceeding to the stable, three horses were found, one dry and blanketed, the next very wet, having the appearance of natural sweat, and was smoking greatly. On this point considerable evidence was taken as to the tendency of horses, when subject to particular diseases, to sweat in the night season in the manner described. There was other evidence with regard to the instrument of death, which left little doubt, and the result was a conviction and a subsequent full confession.

VIII. POSSESSION OF FRUITS OF OFFENCE.

§ 858. When property has been taken from the deceased, the possession of it in a third party opens an important avenue of inquiry. It should be remembered, however, that light articles, which might be regarded as ear-marks, may be secreted by the guilty party on the person or among the goods of innocent parties.²

§ 859. To make the possession of stolen goods a reliable element

¹ 2 Wheel. C. C. 412.

² *Supra*, § 836, See this subject discussed in Wh. Cr. Ev., §§ 758 *et seq.*

of proof in indictments for stealing, it is necessary that the presumption should be recent, and that ear-marks should be shown by which the property can be individuated. The defendant's explanations, also made at the time of the discovery of the property in his possession are to be taken into account.¹ In prosecutions for homicide it is relevant to trace to the defendant articles connected with the deceased. Has the article in the defendant's possession such ear-marks as made it his duty, on its coming into his hands, to seek out its owner? For supposing even that he *found* it, yet, if it has such ear-marks, he is guilty of larceny if he do not return it to the party whose property he is thus notified it is. Hence the question of "recent" is much affected by that of marks of this class. Thus a book without any name upon it, or any mark to identify it as belonging to any particular private owner, may innocently be picked up at a book-stall within a few hours after it was stolen. Yet, notwithstanding the "recentness" of the stealing, no jury would or should convict a person in whose possession the book was found, although he should be unable to remember the book-stall at which he bought it, or in any way to corroborate his story. For the purchase of second-hand books at book stalls is of such every-day occurrence, and in a large city book-stalls are so numerous, and so easily confused in the memory, that it would be both irrational and unsafe to convict of larceny simply because the defendant had in his possession, shortly after it was stolen, a book which had nothing on its face to show that it had been taken feloniously from any particular owner. It would be otherwise, however, with a book of marked appearance, and peculiar value, containing an owner's name. Recent possession, also, of an ordinary coin amounts to but little; it is otherwise as to possession of a collection of coins which are unique and rare.

In October 1872, a gentleman of New Orleans discovered in a junk shop in Louisville, Kentucky, a watch given by Washington to Lafayette, in 1781. The watch, according to a report of its appearance, "is open faced, of gold, with a double case, and may be remarked as of a peculiar appearance, being of only ordinary size, but nearly as thick as it is wide. The outer case bears upon its entire surface carved figures in bas-relief, representing the picture of Mars offering a crown to the Goddess of Peace, who is surrounded by her emblems,

¹ Wh. Cr. Ev., §§ 759 *et seq.*

² Ibid. § 762.

while over all appear the stern implements of war, hung high out of reach. On the inner case appears the yet clearly legible inscription, ‘G. Washington to Gilbert Motier de Lafayette, Lord Cornwallis’s Capitulation, Yorktown, Decb’r 17, 1781.’ On the covering of the works is seen the maker’s name, ‘E. Hallfax, London, 1759.’” It was stolen from Lafayette in 1824, when in Tennessee, during his progress through the United States in that year; and in vain were instituted the most active measures for the detection of the thief, including a reward of a thousand dollars by the governor of Tennessee. Now in view of the singularly conspicuous character of the watch, and the remarkable publicity given to its theft, no one who had it in possession could, if that possession were unexplained, have at first successfully defied the inference of larceny which such possession created. Yet there was necessarily a time when, even as to this remarkable watch, this inference was to fade away. For three, five, or even seven years, it would be possible and proper to say to the holder of the watch, “ You must explain how you got this, and prove yourself innocent, or else you will be held to be guilty.” But after seven years, if we adopt the well-known analogy of time as ebbing in other relations, the inference of larceny, even as to this particular article, might be held gradually to pass away. Certainly, after thirty years, the average duration of a generation, it could be no longer rightfully made.

D. INFANTICIDE AND FŒTICIDE.¹

I. HOW FAR FŒTICIDE IS AFFECTED BY THE DEGREE TO WHICH GESTATION HAS PROCEEDED.

§ 860. By the common law, as expounded by the earlier text writers, the destruction of an infant *en ventre sa mère*, is a high misdemeanor, no matter what is the stage of gestation;² and, if the death occurred at any time subsequent to birth, the offence is murder.³ The law in respect to foeticide, in England and in most of the United States, it is true, has been settled by statutes; but independently of statutes, an indictment for assault lies whenever injury has been attempted by violence to the mother. All assaults are indictable, and the guilty party, upon conviction, is punishable with fine and impris-

¹ See this subject medically examined, *supra*, §§ 84–107, 108–178.

² 3 Coke’s Inst. 50; Bract. I. c. e. 31; 1 Hawk. c. 13, s. 16; 1 Rus. on Cr. 671; Wh. C. L., 8th ed., §§ 592 *et seq.*

³ R. v. Senior, 1 Mood. C. C. 346; Wh. C. L., 8th ed., §§ 362, 445, 592.

onment; nor, when the offence takes this shape, is it necessary that the aggrieved party should have been even touched.¹

§ 861. Where, therefore, there is no statute defining the offence and prescribing a special penalty, there is no doubt that the attempt to commit foeticide by a third party is punishable as an assault, provided the mother be not an accomplice, and provided an apparent movement towards physical violence be begun. Where, however, she consents, this form of prescribing must be abandoned, and the term "assault," if inserted in the indictment, discharged as surplusage. In such a state of facts, an interesting question arises, which was anticipated in England by the early enactment of a statute providing for the whole subject-matter, but which, in the United States, has been the subject of much conflicting adjudication. It being everywhere conceded, that producing the abortion of a *quick* infant is indictable a common law, the courts of Massachusetts,² of New Jersey,³ and of Iowa⁴ have held, that, where the infant is not quick, the offence is no indictable unless made so by statute. The contrary opinion has been advanced and carried into effect with equal resoluteness by the Supreme Court of Pennsylvania.⁵ This conflict of authority has been fully considered elsewhere, and it has been maintained, after a full examination of authorities, which it is not necessary now to review, that the protection of the law is cast round an unborn child from its first stage of ascertainable existence, no matter whether "quickening" has taken place or not, and that consequently, no matter what may be the stage of gestation, an indictment lies for its wilful destruction. Except however, in those states in which no legislation on this branch of criminal law has been had (and they are but few), the point has ceased to be of practical importance; but in those jurisdictions where the common law still exists untouched, and where there has been as yet no judicial settlement of the immediate question, it may be reasonably contended that to make the criminality of the offence depend upon

¹ In Maschka's *Handbuch der Gerichtlichen Medizin*, 3d vol., (Tübingen 1882), pp. 281 *et seq.*, the subject of infanticide is discussed in relation to abortion.

² *Com. v. Parker*, 7 Met. 263; *Com. v. Bangs*, 9 Mass. 387. See as to present law, *Com. v. Wood*, 11 Gray 95.

³ *State v. Cooper*, 2 Zabriskie 57.

⁴ *Hatfield v. Gano*, 15 Iowa 177; *Abrams v. Foster*, 3 Clarke 274.

⁵ *Com. v. Demain*, 6 P. L. J. 29; *Bright*. 441; *Mills v. Com.*, 13 Penn St. 631; see *State v. Howard*, 32 Vt. 380.

the fact of quickening is as repugnant to sound morals as it is to enlightened physiology. That it is inconsistent with the analogies of the law is shown by the fact that an infant, born even at the extreme limit of gestation after its father's death, is capable of taking by descent, and being appointed executor.

§ 862. In most of the states, however, statutory provisions now exist by which foeticide is made the subject of specific penalties.¹

§ 863. Where an abortion was effected by the use of instruments and the administering of ergot, and the patient had died from the effects, the parts of the person upon whom the instruments were used for the purpose of procuring an abortion, which had been preserved, were properly allowed to be submitted to the inspection of the jury in connection with the testimony of the physician who made the *post-mortem* examination.²

§ 864. The question of the agency employed is to be determined inductively from all the circumstances of the particular case from which inferences can be logically drawn.³

§ 865. As is remarked by Mittermaier, it cannot be concluded simply because abortion has followed the use of certain means of abortion, that it actually resulted from the use of such means. In some such cases it may be shown that the abortion did not result from the means employed, but was produced by some other circumstances. In each case the physician should be careful to examine whether any such circumstances exist.

§ 866. As is observed by Dr. Böcker,⁴ the question, when drugs are administered, depends in part on the quality and quantity of the drug, in part on the constitution of the patient. A pregnant woman, of average health, may eat, for instance, once or twice a day a grain of ergot without detriment, while twenty grains taken daily for a week together would certainly cause abortion. But there may be cases of abnormal sensitiveness to such drugs, and cases of abnormal torpor.

It is important to consider, in cases of this class, whether the foetus was alive at the time of the operation. If dead, and known by the

¹ Wh. Cr. Law, 8th ed., §§ 592 *et seq.* As to New York, see *Evans v. People*, 49 N. Y. 386.

² *Com. v. Brown*, 14 Gray 419. See as to proof by inspection, Wh. Cr. Ev., § 312.

³ See Wh. Cr. Ev., §§ 707 *et seq.*; Wh. Cr. Law, 8th ed., §§ 592 *et seq.*

⁴ Gericht. Med., § 115; and see fully, *ante*, §§ 1-22, 84-107.

operator to be so, the statutory offence of killing a live child is not made out.¹

But non-pregnancy on the part of the woman is no defence to an indictment for an attempt to make her miscarry with a supposed child.²

II. HOW FAR THE OFFENCE IS AFFECTED BY THE FACT OF BIRTH

§ 867. While, as has been seen, it is a misdemeanor at common law to kill a child in its mother's womb, the offence becomes murder if the child dies after birth in consequence of violence inflicted before delivery. It was decided, in fact, at a very early period, that if a child die *after* birth in consequence of a potion or bruises administered *before*, the offence is murder.³ And *a fortiori*, when a blow is inflicted on a child's head *during* birth, and it is afterwards born alive, and then dies, the same result obtains.⁴ But the fact of actual birth must be shown, and mere breathing is not enough for the purpose.⁵ It is no defence that the child died in consequence of want of viability resulting from premature delivery, if this delivery was caused by the defendant's misconduct in bringing about a miscarriage for the purpose of destroying the child.⁶

§ 868. Great confidence was reposed by courts in former days on the hydrostatic test; and several executions took place on testimony of viability of this character alone. Such, however, is no longer the case. On the trial of a woman in 1835, at Winchester Spring Assizes, in England, it was proved that the lungs were inflated; but on cross-examination the medical witness said that if the child died *during* birth the lungs might have been inflated. As the question of guilt depended upon the child having been *born* alive, and as the fact of the inflation of the lungs was the only evidence of life that was produced Mr. Baron Gurney stopped the case.⁷ A single sob during birth is

¹ Com. v. Wood, 11 Gray (Mass.) 85.

² R. v. Goodhall, 2 Cox C. C. 40; 1 Den. C. C. 189, and other cases cited Wh. Cr. L., 8th ed., § 596. In Maschka's Handbuch der Gerichtlichen Medizin 3d vol. (Tübingen, 1882), pp. 235 *et seq.*, the subject of criminal abortion is considered in detail.

³ Wh. Cr. L., 8th ed., §§ 445 *et seq.*

⁴ R. v. Senior, 1 Mood. C. C. 346.

⁵ Wh. Cr. L., 8th ed., §§ 445 *et seq.*, 592.

⁶ R. v. West, 2 Car. & Kir. 783; Wh. Cr. L., 8th ed., § 445.

⁷ R. v. Simpson, Cummin on the Proof of Infanticide, p. 40.

enough to produce inflation.¹ And where on an indictment for infanticide it appeared in evidence that the child's throat was cut, the wound dividing the right jugular vein, and that the lungs floated in water, and proved to have been inflated; but the medical evidence showed that this test only proved that the child must have breathed, and not that it had been born alive, and that there were instances of children being lacerated in the throat in the act of delivery; Mr. Baron Parke told the jury, that, if they entertained doubts as to whether the child was born alive, it was hardly necessary to go into evidence on behalf of the prisoner. The jury, without going further, returned a verdict of acquittal.²

III. TESTS OF VIABILITY RECOGNISED BY THE COURTS.

§ 869. Some fluctuation of sentiment has existed as to how far it is necessary for the child to be actually separated from the mother.³ While on the one hand, it is not enough for the child to have breathed, unless the whole body was brought into the world,⁴ and while more than one learned judge has expressly ruled that there must be an entirely independent circulation,⁵ on the other hand, the fifteen judges have united in holding, that to constitute such an independent existence, so as to constitute murder, it is not necessary that the child should have breathed,⁶ nor that the umbilical cord should be severed.⁷ "If that" (the reverse) "were the law," said Vaughan, J., "the child and the after-birth might be completely delivered, and yet, because the umbilical cord was not separated, the child might be knocked on the head and killed, without the party who did it being guilty of murder."⁸ In another case, on the part of the prosecution, there was strong evidence to prove that the child had been wholly produced alive from the prisoner's body, and that she had strangled it by fastening a handkerchief, or some such thing, around its throat;

¹ *R. v. Davidson*, 1 Hume's Com. 486.

² *R. v. Grounell*, Wills on Circum. Ev. 205.

³ As to viability, see *ante*, §§ 41, 66–7, 128.

⁴ *R. v. Poulton*, 5 C. & P. 329; *R. v. Enoch*, 5 C. & P. 539; *R. v. Wright*, 9 C. & P. 754; Wh. on Hom., § 446; Wh. Cr. L., 8th ed., §§ 445–6.

⁵ Parke, J., *R. v. Enoch*, 5 C. & P. 539; Gurney, B., *R. v. Wright*, 9 C. & P. 754.

⁶ *R. v. Brain*, 6 C. & P. 349.

⁷ *R. v. Trilloe*, 1 Car. & Mars. 650; s. c., 2 Mood. C. C. 413.

⁸ *R. v. Reeves*, 9 C. & P. 25.

but it was clearly proved by Mr. Wood, the surgeon who examined the body of the child, that it must have been strangled before it had been separated from the mother by the severance of the umbilical cord; and it was further stated by Mr. Wood that a child has, after breathing fully, an independent circulation of its own, even while still attached to the mother by the umbilical cord; and that, in his judgment, the child in question had breathed fully after it had been wholly produced, and had, therefore, an independent circulation of its own before and at the time it was strangled, and was then in a state to carry on a separate existence. "If you are satisfied," said Erskine, J., to the jury, "that this child had been wholly produced from the body of the prisoner alive, and that the prisoner wilfully and of her malice aforethought, strangled the child after it had been so produced and while it was alive, and while it had, according to the evidence of the surgeon, an independent circulation of its own, am of opinion that the charge is made out, although the child, after it was so strangled, still remained attached to the mother by the naval string." The prisoner was convicted, and, upon a case reserved, the judge held the conviction right.¹

§ 870. The following legal propositions may be considered as established:

(1) Where there is a malicious wound inflicted on an infant, with intent to produce death, and death ensues *after birth*, the offence is murder.

(2) Where there is a malicious exposure of an infant, with intent to produce death, and death ensues *after birth*, it is murder.

(3) Where there is a wanton exposure of an infant, without the intent to produce death, but with the expectation of shifting the support of the infant upon some third person, and death ensues *after birth*, it is manslaughter.

(4) Where there is an exposure resulting from necessity, non-culpable ignorance, or insanity, and death ensues *after birth*, the offence is excusable homicide, in which, in accordance with an American practice, the defendant is entitled to an acquittal.²

§ 871. Ann Walters, the prisoner, who was an unmarried woman, had taken a place in a stage-wagon, on the 13th of April, 1841, at

¹ R. v. Trilloe, 1 Car. & Mars. 650; s. c. 2 Mood. C. C. 260. See Wh. Cr. L., 8th ed. 445.

² See on this topic, Wh. Cr. L., 8th ed., §§ 445 *et seq.*

started in the wagon at about ten o'clock on that night, at the Wellington Inn, which is situated on the Malvern Hills. The evidence showed that she must have left the wagon after that time, as she overtook it at Ledbury. It further appeared that she was delivered of a female child at the roadside, between the Wellington Inn and Ledbury, and that, after the child was born, she had carried it a distance of about a mile to the place at which it was found dead, which was also at the roadside. It further appeared that this was a much frequented road, and that two wagon teams and several persons were on it about the time at which the child was left; and that a wagoner, named Weaver, who was passing along the road, heard the child cry, but, instead of going to tender any assistance, he went on, and told some other persons, who went to the place where the child lay, and there found it dead from cold and exhaustion. The body of the child was found quite naked. It further appeared that the prisoner had arranged with a woman named Thomas to be confined in her house. It was urged for the prisoner by Mr. Charles Phillips that it was clear that the prisoner had no original intention of destroying the child, as she had made arrangements for the taking care of it. He insisted, also, that there was equally little doubt that she had got out of the wagon when seized with the pains of labor; that she had carried the child, after its birth, as long as her strength would allow, and that she had then laid it on the roadside, hoping that some passer-by would render it assistance. Coltman, J., told the jury that, if a party do any act with regard to a human being, helpless and unable to protect itself, which must necessarily lead to its death, the crime amounts to murder; but, if the circumstances are not such that the party must have been aware that the result would be death, that would reduce the offence to the crime of manslaughter—provided the death was occasioned by an unlawful act, but not such as to imply a malicious mind. There have been cases, he said, where it has been held that persons leaving a child exposed and without any assistance, and under circumstances where no assistance was likely to be rendered, and thereby causing the death of the child, were guilty of murder. "It will be for you," he continued, addressing the jury, "in the present case, to consider whether the prisoner left the child in such a situation that, to all reasonable apprehension, she must have been aware the child must die, or whether there were circumstances that would make it likely that the child would be found by some one else, and its life pre-

served, because then the offence of the prisoner would be manslaughter only. It is impossible to say that the offence of the prisoner could be less than manslaughter. It is for you to consider whether, under all the circumstances, the child was left in such a situation that there was a reasonable expectation that it would be taken up by some one else and preserved. Suppose a person leaves a child at the door of a gentleman, where it is likely to be taken into the house almost immediately; it would be too much to say that, if death ensued, it would be murder; the probability there would be so great—almost amounting to a certainty—that the child would be found and taken care of. If, on the other hand, it were left on an unfrequented place, a barren heath, for instance, what inference could be drawn, but that the party left it there in order that it might die? This is a sort of intermediate case, because the child is exposed on a public road, where persons not only might pass, but were passing at the time; and you will, therefore, consider whether the prisoner had reasonable ground for believing that the child would be found and preserved.” The jury rendered a verdict of guilty of manslaughter.¹

§ 872. In a case tried in Pennsylvania, in 1846, before Chief Justice Gibson, Bridget Harman, a married woman, in very destitute circumstances, who had been, it was alleged, deserted some time previous by her husband, was indicted for the murder of a female infant child, at the time nine months old. The evidence showed that at 6 A. M. on the 11th of August, 1846, she had taken the child away from the house where she then lived, and at 9 A. M. she returned, saying she had given it away. She was seen shortly after she left, with a shovel, going towards a stream in which the remains of the child were subsequently found. No question existed but that, under the circumstances, if the defendant was guilty at all, she was guilty of murder in the first degree, of which crime she was convicted, though never executed.²

IV. CORPUS DELICTI IN INFANTICIDE.

§ 873. Mr. Wills classifies the difficulties attending the proof of the corpus delicti in cases of infanticide as follows:

§ 874. (1) *Uncertainty as to the fact of pregnancy.*³—The history

¹ R. v. Walters, 2 Car. & Marsh. 164; 2 Lew. 220; see Wh. Cr. L., 8th ed., §§ 358, 359, 447.

² Com. v. Harman, 4 Barr 269; see Wh. Cr. L., 8th ed., § 309.

³ See *supra*, §§ 776.

of the English queens, Mary I. and Mary II., with each of whom spurious gravidity was frequently mistaken for pregnancy, singularly illustrates this. In a case tried in Lancaster, in 1808, before Mr. Justice Chambre, the suspicion of pregnancy arose principally from the bulk of the deceased while living, coupled with circumstances of conduct which denoted the existence of an improper familiarity between the parties, and from the discovery, upon post-mortem examination, of what was supposed to be the placental mark. The medical testimony was divided. On the one side it was proved that the deceased was subject to obstructions; that the appearance of the uterus might be accounted for by hydatids, a species of dropsy, in that part of the body; and that what was thought to be the placental mark might be the *pediculi* by which they were attached to the internal part of the surface of the womb. On the other side, four medical witnesses expressed a decided opinion that the deceased had been recently delivered of a child nearly come to maturity. The learned judge charged the jury that it was a mere matter of conjecture, *first*, whether the deceased had been with child; and *secondly*, whether she had been the subject of the alleged abortion. The defendant was acquitted.¹

§ 875. (2) *Uncertainty as to the time of death.*—We have already noticed the difficulties which arise when it is necessary to determine whether the child died *before* or *after* birth. The law, as has been seen, is that if the death occurs *after* birth, it is murder; if it occurs before birth, it is but a misdemeanor at common law. It is not necessary at this point to do more than to refer to the views already expressed as to the physiological facts bearing on this point.²

§ 876. (3) *Presumptions bearing on ordinary cases of homicide apply less forcibly to cases of infanticide.*—“Concealment of pregnancy and delivery,” says Mr. Wills, “may proceed even from meritorious motives; as where a married woman resorted to such concealment in order to screen her husband, who was a deserter, from dis-

¹ *R. v. Angus*, Burnett’s C. L. of Scotland 575. In a case which has been already given, a young girl, under the delusion that she had really been confined, made confession of the birth and murder by herself of an illegitimate child, and might have been convicted, had there not been a medical examination showing that no confinement had taken place. *Supra*, § 776 *et seq.*; and see generally *supra*, §§ 18, 37.

² See *supra*, §§ 1-128.

covery."¹ The presumption also (as a matter of fact), that a mother has a natural affection for her child, leads us to require strong proof before we can hold that the mother deliberately took the child's life.

§ 877. (4) *Gestation and delivery, under the most favorable circumstances, are attended with casualties; and in cases of clandestine and illegitimate delivery this must be still more strongly the case.* Such casualties are likely to be both more frequent and more dangerous than is the case with births in wedlock.²

CHAPTER VII.

EXPERTS.

[*As to qualifications of experts, see vol. i. § 275.*

Their duties in conducting examinations, see vol. i. § 300.

vol. ii. §§ 119-21, 327.

Medico-legal examinations, vol. ii. § 700.

Mode of drawing up reports, vol. ii. § 716.]

- (a) Distinction between experts and non-experts, § 891.
- (b) Experts may be asked as to hypothetical fact, but not as to conclusion of law, § 892.
- (c) They may be examined as to conclusions of science, § 893.
- (d) But not as to their opinions outside of science, § 894.
- (e) Ex parte examinations under certain circumstances inadmissible, § 895.
- (f) But not when notice to opposite side would not have enhanced their accuracy, § 896.
- (g) Proposed revision of legislation as to experts, § 897.

§ 890. THE law of experts is, in some relations, so closely connected with that of insanity, that in treating of the latter it has been found necessary to discuss much that includes the former. To these discussions, in connection with the exposition of the subject in the author's work on Evidence, the reader is now referred.³ At present it will have to suffice simply to announce, sometimes by way of recapitulation, sometimes by way of independent statement, the following points:—

¹ Wills on Circum. Ev. 206.

² See *supra*, §§ 1-37.

³ Vol. i. §§ 272-303; Wh. Cr. Ev., §§ 403 *et seq.*

§ 891. (a) *Distinction between experts and non-experts.*—The non-expert testifies to a subject-matter readily mastered by the adjudicating tribunal ; the expert to conclusions not within such range. The non-expert gives the result of a process of reasoning familiar to every-day life ; the expert gives the results of a process of reasoning which can be verified only by specialists. But whether the distinction is to be made at all, and whether the particular witness is an expert in the particular case, is exclusively for the judge trying the case, subject to correction by the appellate court.¹

§ 892. (b) *Experts may be asked as to hypothetical fact, but not as to conclusion of law.*—Experts may be asked their opinion as to the scientific bearing of a particular fact and as to a hypothetical case, but not as to the inferences to be drawn from the whole trial, for this would be to invade the province of the jury, nor as to conclusions of law, for this would be to invade the province of the court.²

§ 893. (c) *They may also be examined as to conclusions of science drawn from particular experiments.*³

§ 894. (d) *But not as to their opinions on matters not of their particular science.*—Opinion as a rule is not admissible testimony ; and the only exception to this rule exists when the witness gives certain conclusions which it requires special study of a particular abstruse science to reach. Where, however, the jury is equally competent with the expert to draw conclusions from facts, then the expert must restrict himself to stating the facts, leaving it to the jury to draw the inferences.⁴ Thus, an expert is not to be asked whether certain disturbances of clothes about a dead body argued death at a particular period,⁵ whether a rape was effected in a way requiring no special scientific knowledge to decide ;⁶ or whether the position of a dead body can be inferred from the character of a wound.⁷ The reasons for this rule are obvious. The parties have a right, when this is practicable, to hear the conclusions or facts on which their rights depend, determined, not by experts who from their present mode of selection often only repre-

¹ Wh. Cr. Ev., § 406.

² See vol. i. §§ 287-292, Wh. Cr. Ev., § 418.

³ See vol. i. § 283.

⁴ Wh. Cr. Ev., § 411.

⁵ People v. Bodine, 1 Denio 281.

⁶ Cook v. State, 24 N. J. L., 4 Zabr. 843. See, however, People v. Clark, 33 Mich. 112; Wh. Cr. Ev., § 405.

⁷ Kennedy v. People, 5 Abbott (N. S.) 147.

sent the party employing them, but by a jury chosen irrespective of the particular case, and acting as arbiter of the conflicting interests. And the jury must form its conclusions, in all matters within its range, on reasoning tested by itself.

§ 895. (e) *Examinations made ex parte, when there could have been notice to the opposite side, are inadmissible.*¹—Examinations, for instance of an alleged lunatic, conducted by a professed specialist, or examinations of blood on clothing, or of alleged poison in the stomach of a deceased person, or in bottles or utensils, can in most cases as readily be made upon notice to the opposing interest as without notice. For various reasons such notice, if practicable, should be given. *First*, it is a familiar principle of law that depositions purely *ex parte*, are inadmissible; such testimony being liable to be affected by fraud or prejudice, and from want of cross-examination, being necessarily imperfect. *Secondly*, there are peculiar reasons why *ex parte* examinations, of the character here noticed, should be undertaken only upon notice to the opposing interest. In such examinations everything depends upon the accuracy of the tests employed; the exhaustiveness of the exploration; the fidelity and cautiousness of the examiner. In questions of poison and of blood-stains, in particular, it is important that there should be on the spot, at the time of the examination, the representative of the adverse interest, for the purpose of seeing that the objects examined had not been previously tampered with, that no foreign elements were interposed, and that the investigation was conducted with scrupulous conscientiousness.² Of course, when investigations are directed by a coroner or magistrate immediately after the commission of a crime, the public action of such functionary is adequate notice to all parties that the procedure is taking place. The very fact also, that such examinations must necessarily be made on the instant, before the traces of crime are defaced, brings such cases within the operation of the exception that notice is not necessary when notice is impracticable. But when, after these preliminary inquiries are over, an examination is desired by one of the parties in interest, and when this examination relates to a subject-matter not fleeting but continuing, then the examination is analogous to the deposition of a witness, and the policy of the law

¹ Wh. Cr. Ev., § 421.

² For some striking observations on this point from Dr. Reese, *supra*, vol. i. § 296, note y.

requires that it should be taken only after notice to the opposite side. Sometimes, perhaps, testimony of value, inadvertently taken, will be excluded by the application of this rule. But this loss will be abundantly compensated for by the suppression of those inquisitorial and imperfect investigations by which the administration of public justice has been so much disgraced,¹ and by the investing of expert testimony with checks and sanctions by which alone can its dignity be restored. And where it is impossible to exclude *ex parte* expert examinations, juries should be advised that such examinations are to be scanned very closely, and unless it is shown that there was no tampering with the thing or person examined, the results should not be accepted as of any authority.²

§ 896. (f) *But investigations by persons having intimate and continuous opportunities of examination, are not excluded because ex parte when these investigations would not be enhanced in accuracy and authoritativeness by being preceded by notice to the opposite side.*—This is commonly the case with regard to investigations by medical attendants (as distinguished from special visiting experts called in *post litem motam*) in cases of insanity.³ It also applies to investigations as to facts of nature (*e. g.*, forces of tides, habits of animals);⁴ as to certain physical peculiarities touching identity⁵; and as to the value or condition of property.⁶

§ 897. (g) *Proposed revision of legislation as to experts.*—The application by the courts of the tests just stated will relieve expert testimony of some of the difficulties under which it now labors, and tend to restore to it a larger measure of public confidence. The radical defect, however, of English and American practice in this respect is the volunteer position of experts, which makes them, to a large measure, the mouth-pieces of a party who often only selects them because their pre-ascertained views suit his purposes, or who only presents them with such materials as subserve his interests. In what way this

¹ See vol. i. § 296 *a.*

² See Wh. Crim. Ev., § 421.

³ See *supra*, vol. i. § 283.

⁴ *Porter v. Poquannoc Man. Co.*, 1 Camp. 117; *Folkes v. Chadd*, 3 Doug. 157; *Cottril v. Myrick*, 3 Fairf. 222.

⁵ *Com. v. Dorsey*, 103 Mass. 413. See *supra*, §§ 620 *et seq.*, 700 *et seq.*

⁶ *Vendine v. Burpee*, 13 Metc. 288; *Walker v. Boston*, 8 Cushing. 279; *Dwight v. County*, 11 Cushing. 201; *Swan v. County*, 101 Mass. 173; *Spear v. Richardson*, 34 N. H. 428; see Wh. Cr. Ev., §§ 404 *et seq.*

defect can be removed is one of the most important questions to which social science can now be addressed. In elucidation of this question the following remarks, condensed from the fifth (1871) edition of Liman's Casper, may be of use.¹

§ 898. "The advantage possessed by most German states of established medical experts in matters of medical jurisprudence and of sanitary economy is one not universally enjoyed. Even in countries so highly civilized as England and France the most arbitrary voluntariness obtains. In some cases (*e. g.*, in France), the judge calls in experts according to his discretion. Sometimes he is guided by personal confidence in his family physician; sometimes by the popular reputation of a distinguished practitioner, without any assurance that the expert thus called has made the particular subject-matter of the trial his specialty. This practice has been beneficially modified in Paris by the appointment by each court of a specific number of permanent experts, whose duty it thus becomes to familiarize themselves with the particular learning of this department, and to devote to it a special interest. Even here, however, there is no fixed system binding imperatively the courts.

"In Germany it is otherwise. In criminal cases, the experts first summoned are exclusively those whom the state, after prior examination of their competency and skill in such particular inquiries, has duly authorized to act for this purpose; while in addition to this there is organized a tribunal of experts to which the opinions of expert witnesses can be referred.

"The first officer in this tribunal is the county or city physician (*Kreis-oder Stadt-physicus, Gerichtsarzt Landgerichtsarzt, u. s. w.*). In Prussia and other countries it is requisite to his appointment that he should be scientifically trained (*rite promovoerter*) in the three primary branches of medicine, surgery and obstetrics. In addition to this, he must have duly passed examination in the specialty of medical jurisprudence, such examination, under a ministerial edict of February 20, 1863, being conducted by the supreme medical board of the state. With him in Prussia and other German states is associated the county surgeon (*Kreis-Wundarzt*), who, in present practice, is the assistant of the official physician above described. In Berlin this distinction was, in 1865, done away with, and two physicians (*Physici*) were

¹ Casper's *Gericht. Med.*, Berlin, 1871, I. § 3.

appointed, who were to alternate in dissections, while all other duties were imposed on them by specific assignment."

From Holtzendorff¹ we have the following additional details:—

"For every circuit (kreis) are appointed a governmental physician and a surgeon. These may differ in their opinions; and for such cases, and for cases of appeals, a medical college is appointed for the province; a college to which are assigned men of peculiar experience and knowledge in medical jurisprudence. And for purposes of final correction, are final appellate courts (dritte Instanzen), established for the entire state. * * * Thus, in Prussia, we have (1) the county physician and county surgeon; (2) the Medical College of the province, consisting of the chief-president, the governmental medical counsellor, two medical counsellors, a pharmaceutical assessor, and a physician whose specialty is the diseases of animals (Departments thierarzt); and (3) an appellate medical commission for the whole monarchy."

A similar system could be readily grafted on our American practice. We are familiar with army physicians and army surgeons, and of subordination in rank in these officers. There would be no difficulty in providing in each county for a county physician, who, by the tests of an adequate competitive examination, shall show his general and special competency for this particular post. In addition to the duties devolved on him of conducting post-mortem examinations, and of pursuing any other investigations that may be required in a litigated issue, such a physician might be made the arbiter in those moot questions by which the law has been kept in a state of such distressing incertitude. Is there such a disease as moral insanity or as *mania transitoria*? Can human blood-stains be distinguished after having become dried? If a question of this kind arise on the trial of a cause, it would not be inconsistent with the analogies of the law to refer it to an official expert, just in the way that a chancellor sends a question of fact to be determined by a master in chancery or by a common-law court and jury. But if this be done it should be done with the checks which attend the chancery system which has just been noticed. The official physician who acts as referee must be placed under judicial restraints. He should owe his appointment to neither party, but to the state, irrespective of any particular case. His duty it should be to take testimony, if needed on the case, and to

¹ Rechts lexicon, Leipzig, 1870, I. 478.

hear counsel, so that he will be in no danger of hazarding one of those rash and ignorant opinions which have so much disgraced this branch of medical practice. After thus judicially hearing the case, it should be his further duty to judicially certify his opinion to the court by whom the reference is made. In proper cases there might be allowed an appeal from such opinions to a supreme court of governmental experts appointed by the state at large. It may be said that this may be productive of occasional delay. This is true, but the difficulties thus arising would not be so great as those which almost every contested medical issue now involves.¹ Soon, also, the delays of appeals would be reduced; for certain great cardinal questions would be settled beyond dispute. We should soon know whether there is such a thing as moral insanity, and whether it is practicable to distinguish human blood after the expiration of a week from the period of its drying. Settle a few such points as these, and we relieve criminal justice of a large part of the uncertainties by which it is now beset, and we will have a series of rules by which cases can be intelligently, consistently and humanely conducted. Nor will this be all. We will be able to obtain the judicial utterances of science as to vexed issues of fact, instead of the interested arguments of experts who are virtually employed as counsel by the party calling them, or the wild utterances of philosophic monomaniacs who are called simply because of their absorption in some unique theory of their special concoction. Such men need not be silenced. Experts as counsel, indeed, will find a proper and important office in presenting the two sides of the issue to the expert who acts as referee. But the expert who fills this last judicial post will be disembarassed of all personal relations. He will have no client to serve, and no past partisan extravagances to vindicate. He will render his opinion as the advocate neither of another nor of himself. When he speaks, he will do so judicially, as the representative of the sense of the special branch of science which the case invokes, governed by the opinion of the great body of scientists in this relation, and advised of the most recent investigations. When this is done, we will have expert evidence rescued from the disrepute into which it has now fallen, and invested with its true rights as the expression of the particular branch of science for which it speaks. It may, it is true, be said that science is in progression, and that we cannot fix her by judicial utterances. But

¹ See vol. i. § 296 *a.*

juridical law also is progression, and what is proposed for physical and psychological law is only what is an unquestioned incident of judicial law. In fact we have to come to this even with our present machinery of justice. There is no patent case, for instance, which is tried, in which the court does not lay down the laws of science as at the time existing. The only change that the proposal now made involves is that the court should, in its investigations, have the aid of official assessors. These assessors may be appointed by the state, or by the court for the special case. But, be this as it may, they will not labor under the disability of being selected as the representatives of particular litigants. It is true that to the plan here suggested, it may be objected that if it be adopted, the state, in the selection of its medical and surgical assessors, will be charged with the function of arbitrarily deciding which of two contending schools of practice is to be imposed on the community as authoritative. To this, however, the answer is that the plan proposed leaves it open to parties to supplement the examination by the testimony of unofficial experts selected by themselves. The court and jury trying the case will not be bound by the testimony of the official expert. But they will have the advantage of his researches in securing a non-partisan presentation of expert law.¹

¹ In an article in the London Lancet, cited in the Law Times of July 8, 1882, we have the following : The Lancet says, " Several cases which have recently been considered in the higher courts of Scotland have brought into unfortunate prominence the diversity of opinion regarding the cases in dispute so frequently manifested, even by the most distinguished members of our profession. A few months ago, in a murder trial at Aberdeen, the most contradictory opinions regarding the mental condition of the culprit were expressed, and Lord Deas signified his unwillingness to have his mental condition investigated by one of these medical men, evidently fearing that he himself might be incarcerated. Other two cases have just been decided in the court of session before Lord Fraser and a jury, in which heavy claims were made against a railway company for damages in a collision. Eminent men were engaged in each instance. In the first case the witnesses for the pursuer gave an unfavorable prognosis, expressing their belief that he was suffering from congestion of the spinal cord. For the defence it was alleged that rheumatism or gout alone was present, and that complete recovery might soon be expected. In the second case it was stated for the pursuer, on grounds which were carefully given, that he suffered from meningitis ; whereas for the defence the opinion was expressed that no organic disease was present, and that recovery might be expected in from eight to twelve months. Lord Fraser stated that ' the evidence was as unsatisfactory as any he had seen. It left on the mind the distressing impression, that the

science of medicine was simply a science of guessing and experts. Different doctors with equal confidence and equal dogmatism expressed contrary opinions upon the same condition of things.' He advised the jury to exercise their common sense, throw overboard the medical opinions, and go by the facts. It is surely unfortunate that such exhibitions should take place, as they are in every way detrimental to the highest interests of our profession. *If preliminary conference fails to bring about agreement, the whole of the opinions might be laid before a neutral party proposed by the court, and, if necessary, this last gentleman might, in the light of these opinions, examine the patient for himself.* In any case these constantly recurring differences are so injurious that mutual discussion should at least be attempted."

In an article in the London Spectator, of December 22, 1883, we have the following: "It is sometimes a misfortune for a man to have a confirmed habit of lucid statement, or such a command of words that his meaning can never be mistaken. Lord Chief Justice Coleridge is distinguished for that command, and often as it has assisted him in life, on Saturday it betrayed him. Subtle as the thought was which he had to express upon the most material evidence in the Belt case, he did express it with admirable clearness, and, as a consequence, the educated public understood him thoroughly, and with unusual unanimity decided that, whatever his accuracy in the case before him, he was wrong in his general principle. The issue left to the jury in that case mainly depended upon a single question of evidence. Could Mr. Belt impart to a piece of sculpture that artistic quality, that impress of something spiritual and beyond mechanical skill, which undoubtedly belonged to certain works professedly his, with which he had secured orders, and as undoubtedly did not belong to other works which were certainly of his doing. Mr. Belt's counsel, understanding juries, produced in his favor witnesses 'of good social standing'—that is, witnesses likely to be disinterested and truthful—who saw him actually at work without help upon the disputed works in question. That they did so see him repeatedly and continuously is beyond demur, and indeed is not denied either by counsel or by the bitterest partisans. In answer to this, his assailant's counsel produce, so to speak, the whole Academy, an entire body of experts in art, who, giving evidence under compulsion, and being wholly disinterested, declare that the alleged fact is an impossibility, that if Mr. Belt did those busts, which nobody doubts, he most certainly did not do the busts disputed. The artistic quality, the mental impress, the *quid mirum*, which is as patent to them as the correctness of a note is patent to those who understand music, is present in one set of works, and wanting in the other set. It could not have been so wanting in a man competent to do the work which attracted orders, and was wanting in the undisputed work, and therefore Mr. Belt could not have done both. He must choose, and as he certainly did the poor work, he as certainly did not do the work of artistic merit. The Academy was all on one side, but the judge and jury rejected the experts' evidence, and mainly upon this ground, a new trial was demanded.

"The positive result of the application is a compromise which, though accepted, may break down, and upon which we have, therefore, nothing to say, except that it is a sensible compromise; but Lord Chief Justice Coleridge, in

his judgment, which was wholly for a new trial, laid down a doctrine which concerns all artists and all literary men, and which certainly is one of exceeding breadth. It is nothing less than this—that, as regards the existence or non-existence of the artistic quality, the mental impress, in a work of art, the evidence of experts must override that of any other witnesses, even of those who have seen the work done, and must be considered final. We give the words as reported in the Times: ‘Now, the character of genuineness of works of art is not in my judgment, matter of opinion. Anything, no doubt, may be said to be a matter of opinion as to which men will not take the trouble to inform themselves. But a knowledge of art is like a knowledge of science; it is matter of education and experience; and it seems to me that you might almost as well disbelieve a body of astronomers, who tell you that the earth moves and the sun stands still, on the ground that very eminent members of society tell you, as a fact, that they have seen the earth stand still and the sun rise up in the east and go down in the west, as disbelieve a body of great artists who tell you that the same man did not make two works of art, because persons very high in the social scale, but with no knowledge or training in art, tell you as a fact that they saw the same man at work upon them. It is what I think (with deference) the fallacy of opposing ‘fact’ to ‘opinion’ in this matter that constitutes, to my mind, the error of the summing-up of my learned brother, and which has led the jury to a conclusion against the weight of the evidence. I do not doubt that one fact is worth twenty opinions, ‘fact’ and ‘opinion’ being each used in its proper sense. But the words are not used in their proper sense, if ‘fact’ is confined to the physical fact of working manually on a bust, and the scientific conclusion of a body of men as to an artistic fact is called ‘opinion.’ It is not ‘opinion’ at all; it is evidence of fact.’ That is surely a dangerously wide dictum, for it amounts to this—that no evidence whatever can overthrow the evidence of experts, and would involve this extraordinary conclusion—that if Mr. Belt had executed a bust from first to last in Lord Coleridge’s presence, and the Academicians testified that he could not have executed it, its artistic quality being too great for him, Lord Coleridge would have been bound to believe that he did not execute it. In presence of the ‘fact’ stated by such a body, his own eyesight would be no evidence at all. Will the Lord Chief Justice go quite that length, and if not, why should he declare other evidence, admittedly honest, to be so absolutely untrustworthy? If, indeed, he would reject himself as a witness, he is consistent, and most complimentary to the critical power of the Academy; but then, does he not push the limits of that faculty, which, no doubt, exists often in high perfection, beyond right reason? It seems to us he does, for not to press further an argument which, though unanswerable, will be said to be *ad captandum*, Lord Coleridge’s extreme confidence in experts would involve a denial of the possible occasionalness of genius, the conceivable chance of a man existing who could do under one set of circumstances what he could not do under another set. An artist of that kind might give us, say, to day, a soulless bust of the Queen, a work absolutely lacking everything but mechanical ingenuity; and next month produce a bust of Mr. Tennyson instinct with the artistic somewhat which differentiates art from manufacture. Surely the possibility of such intermittent power has always been acknowledged. The

writer is unwilling from self-distrust to quote examples from the domain of Art, but he certainly believes that Haydon's fame and failure are best accounted for in this way, and has seen pictures by far greater artists than he which were unrecognisable. Certainly it is so in literature. There is not a living poet who has not produced verses of which critics depending on their faculty alone would not have said, with perfect confidence, that be their author whom he might, he certainly was not—their real author. Criticism is only opinion, even in extreme cases, and if Miss Braddon and her publisher swore that she wrote '*Middlemarch*', and four or five trustworthy amanuenses swore that she dictated it to them two years before its appearance in print, we could not, on the testimony of her other novels alone, swear that she did not. Suppose, to put a vulgar supposition, that an artist were one of those men whom nothing but a prospect of competition, or of large gain, or the stimulus of wine, woke out of a certain machine-like habit, or induced to put any mind into his work at all. Such persons undeniably exist in literature, as we can testify; and why should they not exist also in art? That error in such criticism of experts is infrequent and improbable must be admitted heartily, but that it is impossible, so impossible that criticism ought to override direct and unsuspected evidence, is too wide a doctrine. Lord Chief Justice Coleridge would hardly lay that down about any individual artist, however great, and what is an Academy, except a collection of individuals trained in such matters to think very much the same thoughts?

"Let us take the commonest of all kinds of evidence by experts. The art of M. Chabot and his confrères is, in substance, a power of criticism exactly akin to that of Sir Frederick Leighton, though applied over a more limited field. M. Chabot is incessantly studying handwritings, he knows precisely the differences of artistic quality in them, and he can, we imagine, produce most handwritings himself. Well, suppose M. Chabot and three other experts of equal rank swear to Dr. Benson's signature, and the Archbishop swears that it was not his, which would Lord Coleridge believe? The experts would be scorched up, in his judgment; yet what do they lack to evoke confidence in their testimony which Academicians possess? Experience? It is all on M. Chabot's side. The power of criticism? It has been shown and justified by subsequent confessions in a hundred courts. Scientific knowledge? M. Chabot's art is nearer a science, resting as it does on calculations which are always the same, than criticism either in literature or art can possibly claim to be. Yet M. Chabot's evidence would be rejected, and properly rejected, in the face of evidence morally much stronger. It would be, in fact, opinion, and though usually right, so usually as to create a violent presumption in its favor, is not entitled to that infallibility which Lord Coleridge, on his own principle, must claim for it. It was necessary, and very right, for the Lord Chief Justice to point out that, in his judgment, in this case the violent presumption in favor of the Academicians outweighed the evidence of eye-witnesses, who, of course, could not say they saw the spiritual impress given; but in his effort to do this effectively, he has been led to say something far too strong."

CHAPTER VIII.

LIFE INSURANCE.

Life insurance is a contract, in consideration of an annuity paid insurer, to pay to parties interested a fixed sum on the death of the party insured, § 899. May be for the life of another, § 900.

Property of beneficiary becomes vested, § 901.

Interrogatories issued by company, § 902.

Representation to be distinguished from warranty, § 903.

Effect of representations to medical examiner and to common agent, § 904.

Fraud not necessary to defeat claim, § 905.

Suppression equivalent to misstatement, § 906.

"Good" health does not mean "perfect" health, § 907.

"Dyspepsia" does not necessarily involve ill health, § 908.

"Serious illness" to be determined by concrete case, § 909.

Spitting blood not necessarily a mark of disease, § 910.

Term "hereditary disease" to be strictly construed, § 911.

Material misstatement of age, occupation, or residence vitiates, § 912.

Death from negligence or misconduct may be excepted, § 913.

And so as to suicide, § 914.

Intemperance material, and so of opium eating, § 915.

Death to be inferred from circumstances, § 917.

Simulation to be guarded against, § 918.

How far "accident" insurances are distinguishable from life insurances, § 919.

Insurance as a motive to murder, § 920.

§ 899. *A contract for an annuity to pay a fixed sum on death of insured.*—Life insurance is a contract by which the insurer, for a consideration, engages to pay to a specified person a specified sum on the death of a person in whose life the person insuring has an interest. It is in most respects similar to other insurances for a fixed sum; the difference being both in the object and in the degree of certainty of ultimate liability. In marine insurance, in the first place, the contract is to indemnify in case of the loss of a ship from which the party insured derives benefit, while in case of life insurance the contract is to indemnify in case of the loss of a life from which the party insured derives benefit. Nor is the contract in life insurance any more absolute in its character than the contracts in fire and marine insurance. Houses and ships undoubtedly deteriorate in time, but so do lives waste; and the life of an old man may diminish in productive power

just as ships and houses diminish in such power as they grow old. If there be no gambling in the adventure, and if the insurance be for a fixed sum, then the contract holds good notwithstanding intermediate depreciation.¹ In fact it is as an equipoise to such depreciation that life insurance as an institution exists. There would be no object in insuring lives if lives did not waste and expire. And the essential feature of life insurance, so it has been held, is that it is a contract to pay a specific sum of money on the death of the object of the policy, in consideration of an annuity payable to the insurer. The contract differs, therefore, from fire and marine insurance; in the second place, in that while fire and marine insurances are contracts of indemnity, this is not the case with life insurance. In life insurance, death being certain to all men, the loss is imposed sooner or later on the insurer from the nature of things, supposing that there be no intermediate forfeiture, whereas in fire and life insurance the loss is only imposed on the happening of a comparatively rare contingency.² In the one case, therefore, the contract is for the payment of a fixed sum on an event whose time is uncertain, but which will be sure to occur; in the other case it is an insurance against a merely probable contingency, and is usually for a loss to be incurred and not for a fixed sum.³

§ 900. *Insurance may be on life of another.*—Not only may a party insure his life for the benefit of others, but this insurance may be effected by any person interested in such life. A mere speculative insurance of the life of a stranger, it is true, will not be sustained, as being of the nature of a gambling adventure; but wherever there is an interest there an insurance will be held good. Thus, where a sister was in the main supported by her brother it was held that she had an insurable interest in his life;⁴ though in England, under a statute passed in 1776, prohibiting wagering policies, it has been held that a parent has not an insurable interest in the life of a child unless it should appear that some pecuniary support came or was likely to come from the child to the parent.⁵ But a wife may insure her husband's

¹ See May on Insurance, § 7.

² Godsall v. Boldero, 9 East 72.

³ Dalby v. Ass. Co., 15 C. B. 364; and cases cited in May on Insurance, §§ 7 et seq.

⁴ May on Insurance, § 103; Lord v. Dall, 12 Mass. 115.

⁵ Ibid., Halford v. Kymer, 10 B. & C. 725; Worthington v. Curtis, L. R., 1 C. D. 419.

life or a husband that of his wife;¹ a creditor may insure his debtor's life;² an employee the life of an employer.³ There has been much doubt expressed whether a wager policy on life is void at common law. That it is not necessarily so has been asserted in England, though with occasional expressions of dissent;⁴ but in this country the weight of authority is that such insurances are void as against the policy of the law.⁵ But this doctrine must be strictly limited, or otherwise life insurance would be cut up by the roots. Few life insurances are there in which the insured is not influenced in making his application by speculative considerations. A father, for instance, insuring for the benefit of his children, might readily attach what might be called a speculative value to his life, and so a creditor might attach a speculative value to the life of his debtor. To make such insurances dependent upon the question whether there was an actual exact interest of the beneficiary in the sum insured,—which would be the consequence of a strict application of the rule before us,—would create far more uncertainty and speculativeness in the contract of life insurance than it would cure. It would make the validity of an insurance policy dependent not on its terms, but on the question of the motives of the party applying for the insurance, and of the accuracy of his estimate of the life insured. Hence in the United States a contingent interest is generally held insurable.⁶ It is also settled that the interest existing at the time the policy issued is the measure of recovery, though before the death such interest had intermediately ceased to exist.⁷ "The only essential inquiry," so it is said by the Supreme Court of Massachusetts, "is whether the object of the contract is such as to obviate the objections to a mere wager on the chances of human life."⁸ And wherever A. has a reasonable expectation of gain from the continuance of B.'s life, then B.'s life may be insured for

¹ Whart on Cont., § 456. But see Charter Oak Ins. Co. v. Brant, 47 Mo. 419, as to husband's insurance of wife's life.

² Downes v. Green, 12 M. & W. 481.

³ Hebdon v. West, 3 B. & S. 579.

⁴ See cases cited in Bliss on Life Insurance, tit. "Wager."

⁵ Lord v. Dall, 12 Mass. 115; Ruse v. Ins. Co., 23 N. Y. 516; Franklin Ins. Co. v. Hazzard, 2 Ins. Law J. 180; though see Trenton Ins. Co. v. Johnson, 4 Zab. 576; Mowry v. Ins. Co., 9 R. I. 346; and see Wh. on Cont., § 456.

⁶ See May on Insurance, §§ 109 *et seq.*

⁷ Hebdon v. West, 3 B. & S. 579.

⁸ Forbes v. Ins. Co., 15 Gray 249; see Forbes v. Ins. Co., 6 Gray 396.

the benefit of A.¹ But unless there be some reasonable dependence for support, a nephew has not an insurable interest in his uncle's life,² nor a brother in a brother's life.³

Where, however, the object of the insurance is obviously a wager, as where to nominally secure a debt of \$70, an insurance is effected for \$3000, the contract is inoperative.⁴

¹ *Hoyt v. Ins. Co.*, 3 Bosw. 440; *Miller v. Ins. Co.*, 2 E. D. Smith 268. "It is sufficient," so declares the Supreme Court of the United States, "to show that the policy is not invalid as a wager policy if it appear that the relation, whether of consanguinity or of affinity, was such, between the person whose life was insured, and the beneficiary named in the policy, as warrants the conclusion that the beneficiary had an interest, whether pecuniary or arising from dependence or natural affection in the life of the person insured." *Phoenix Ins. Co. v. Barley*, 13 Wall. 616.

² *Mowry v. Ins. Co.*, 9 R. I. 346.

³ *Lewis v. Ins. Co.*, 39 Conn. 100.

⁴ *Cammack v. Lewis*, 15 Wall. 643.

That a partner may insure a partner's life, see *Mitchell v. Ins. Co.*, 45 Me. 104; *Morell v. Ins. Co.*, 10 Cush. 282; *Bevin v. Ins. Co.*, 23 Conn. 244; *Trenton Ins. Co. v. Johnson*, 4 Zab. 576.

"The annual premium may be looked upon as consisting of two parts, one defraying the annual cost of insurance dependent on the death rate, the other put aside as a reserve fund. Up to a certain period the premium is larger than the actual cost of insurance, but a time arrives when it does not suffice, and then the reserve must contribute the difference." Mr. Weihle, in 19 Pop. Science Monthly, 736.

"Intimately connected with the reserves and dividends, and next in importance, is the question how lapsed or forfeited policies should be treated. * * * In the early days of the institution, when it was prudent to err on the side of safety, the view prevailed that a policy was a contract for life, from which neither party could withdraw. Instead of a single payment in advance, annual account payments were accepted, but it was thought that a violation of this condition could only be regulated by absolute forfeiture of all previous contributions. As the business grew in importance, and long experience proved it grounded on reliable foundations, the harshness of this rule began to attract attention. In England, Dr. Farr advised the issue of non-forfeitable policies, and the allowance of a definite cash surrender value on them. In this country the insurance commissioner of Massachusetts first brought the subject before the legislature of that state, and a non-forfeiture law was passed in 1861. In opposition to the views held by actuaries of the old school, a tendency extreme in the other direction now began to assert itself. It was contended that the reserve pertaining to each policy should be considered as a deposit in a savings bank, to be withdrawn at the pleasure of each individual insurer. This position was combated as wrong in theory and as absolutely subversive of the business in practice. Insurance when applied to the individual becomes an absurdity, and

§ 901. *Property of beneficiary to become vested.*—Questions of great difficulty, as to which the courts have been much divided, arise when a party who insures his life for the benefit of his personal representatives makes an assignment of the policy to a third party. These questions, however, belong to formal jurisprudence, and are not within the range of the present volume. It is enough here to say that where a policy is taken out for the benefit of a third party who has an interest in the life, such third party acquires a vested right in the policy.¹

§ 902. *Interrogatories issued.*—It is the practice for the insurer to issue interrogatories to be placed in the hands of applicants requiring their answer as to all matters pertinent to the insurance. The interrogatories must be direct and specific; and the omission to answer an interrogatory which is vague or equivocal cannot be charged as a suppression.² Nor when the interrogatory goes to what is a matter of opinion is the applicant open to criticism if his answer is one of opinion.³

it can only be safely conducted on averages dependent upon large aggregates. * * Therefore, while it would be unjust to confiscate the whole accumulated reserve fund on lapsed policies, it is but fair that such a charge be made as fully to compensate for the loss of a withdrawing member. These views may be considered as the equitable middle course between two extreme positions, and they are now very generally conceded and adopted in practice." Ibid., pp. 739-740. A statute was passed in New York, in 1880, regulating life insurance on this basis.

¹ May on Insurance, §§ 390 *et seq.*; see 12 Ins. L. J. 337.

² May on Ins., § 210.

³ Hogie v. Ins. Co., 6 Robert. N. Y. 567; Higbie v. Ins. Co., 53 N. Y. 603; see Jones v. Ins. Co., 3 C. B. N. S. 65.

"Different rules have been given by actuaries for calculating the expectation or duration of life at different ages. It is difficult to test their accuracy, except in reference to large numbers of persons living under similar circumstances, and for these groups of the population statistics do not fairly provide. Age is the point from which nearly all the Tables of Mortality start, without reference to health, trade, occupation, or social position. One of the most simple of these rules for calculating the duration of life from 5 to 60 years has been given by Willich; he considers it to be equal to two-thirds of the difference between the age and 80. Thus, in a man 20 years of age the difference is equal to 60, and two-thirds of this are equal to 40, the probable duration of life for a person of average health at 20. Each office has its own rules for calculating the amount of premium to be paid by the person who effects an insurance. As insurance offices are very numerous and their profits are large, it is obvious that their calculations must be very much in their own favor. The expectation of life in the insured is ordinarily much greater than they assign to it; at the same

§ 903. *Representation to be distinguished from warranty.*—The decisions on the subject of life insurance cannot be understood without time, the amount payable in the form of premium is kept down by competition. With respect to the influence of *profession*, a higher premium is demanded by some offices for the insurance of the lives of persons whose occupation expose them to great risk—as, for instance, of persons actually engaged in military or naval service. The rule adopted with respect to professions, in one of the best London offices is as follows: ‘No extra premium is required from any person in the army or navy unless on actual service, but the assurance will be void if the party whose life is assured enter into any naval or military service whatever, unless by consent of the directors, endorsed on the policy.’” Taylor’s Med. Jur. 826.

Dr. Taylor, (Med. Jur. 827), gives the following as the form issued by “one of the principal London offices.”

Questions.—The name, residence and profession of the party whose life is to be assured? Place of birth? Date of birth? Age next birth-day—years? (*Proof should be furnished.*) Married or single? Sum to be assured—Term for which the assurance is required? Have you ever been afflicted with gout, rupture, asthma, fit or fits, spitting of blood, or any other disease or disorder which tends to shorten life? Have you had the smallpox, or been vaccinated? Have any of your relatives died of consumption? Are you now, and have you always been, of temperate habits of life? Are you employed in any naval or military service? State if there be any other material circumstance touching your past or present state of health or habits of life to which the foregoing questions do not extend? Name and residence of your usual medical attendant? Has he attended me—years. Name, residence and profession of two friends well acquainted with your health and habits of living? Has known me —— years. Has known me —— years. Has a proposal ever been made on your life at any other office or offices? If so, where? Was it accepted at the ordinary premium, or at an increased premium, or declined? I, the above-named ——, do hereby declare that the foregoing statements, and the answers and replies made by me to the several above-mentioned questions and requisitions and each and every of them, is and are true in substance and matter of fact. And that I have not omitted or concealed any fact, matter, or thing in any wise touching or affecting my state of health, constitution, or habits of life. And I also declare, that it is expressly understood and agreed between myself and the company, that the foregoing particulars, statements, and this declaration are to be considered and taken as the basis of the contract of assurance between me and the company, for this assurance. And in case the foregoing particulars, statements, and declaration be untrue, or contain any untrue averment, the policy of assurance effected in pursuance thereof shall, in any or either of such cases, be absolutely null and void, and the premiums paid thereon shall become and be absolutely forfeited to the company, and not be receivable or recoverable by me or by my representatives. Dated — day of —, 18—. Signature of the person.”

With regard to the insurer sending to the physician of the applicant ques-

out taking into consideration the difference between warranty and representation. It is competent for me, in making a bargain, to say,

tions in respect to the applicant, Dr. Reese (Taylor's Med. Jur., 7th Am. ed. 831), makes the following remarks :

"The practice of sending blank certificates to be filled up by the regular medical attendant of the applicant, gratuitously, has become as great a nuisance in the United States as in Great Britain. We are clearly of the opinion that it is not the physician's *duty* to comply with such requests; it is optional with him to do it, or not. In the first place, the company has no right to the service without an adequate compensation; and secondly, there may be cases in which the family physician would have serious doubts as to the propriety of divulging professional secrets connected with his patient's former health, *e. g.*, in the case of syphilis; or of certain habits, as of occasional drunkenness or opium eating. Of course, all such points must be known to the applicant himself, and on him alone must devolve the risk of any concealment."

The following is an abstract of the form of application for assurance in the Equitable Life Assurance Society of the United States (policy to be written on society's blanks) :

1. Name of the person for whose benefit the assurance is effected.

Residence. Relationship to the person to be assured.

(In case of Endowment on Tontine Policy, state to whom the sum assured or cash value is to be payable, in the event of the stipulated age or period being attained.)

2. Has the above person an interest in the life of the person to be assured, to the full amount now applied for?

3. NAME, AT FULL LENGTH, OF THE PERSON WHOSE LIFE IS TO BE ASSURED.

OCCUPATION, if a Clerk, Salesman or Merchant, state articles dealt in. If a Mechanic or Laborer, state what kind.

RESIDENCE : Town. County. State. Place of Business.

Shall notice of premiums coming due be addressed to last named person at place of business as stated?

(The "Place of Business," if not specially given, will be assumed to be the same as Residence.")

4. Sum to be assured? Kind of policy desired?

(*i. e.* Whether Endowment or Life, etc., answer as to Tontines at queries 6 and 7 only.)

5. Is the premium to be paid annually, semi-annually, or quarterly? Amount of each premium?

6. Does the person desire the Policy to be issued on the Tontine Savings Fund plan, whereby Surplus only participated in at the expiration of the Tontine period, according to the provisions made in the Society's form of Tontine Policy now in use, and does he specifically waive the provisions of Chap. 347, Laws of New York, of 1879, in regard to paid-up or temporary insurance in case of forfeiture; and agree that no allowance shall be made on Policies lapsing during the Tontine Term?

7. Does the person desire the Policy to be issued on the Semi-Tontine plan, whereby Surplus is only participated in at the expiration of the Tontine period, accord-

"I engage that a particular condition of things exist." This is called a warranty, and makes me absolutely liable if the condition of thing

ing to the provisions made in the Society's form of Semi-Tontine Policy now in use?

8. Is the Tontine period to be ten, fifteen or twenty years?
 9. Place and Date of Birth of the person to be assured? Place. County
State. Year. Month. Day.
 10. Person's age at nearest birthday? Weight? Height? Whether married?
 11. a. Is the person now assured in this Society, and, if assured, for how much?
b. Is the person's life now assured elsewhere; if so, for how much, and where?
c. Has an application ever been made for assurance on this life, *on which a policy was not issued for the full amount, and of the same kind as applied for, and at ordinary rates?* If yes, by what company, and when?
 - d. Has any physician given an unfavorable opinion of the person's life?
 - e. Is any negotiation for other insurance now pending or contemplated?
 12. a. Has the person resided south of Virginia, Kentucky and Missouri, or out of the United States? If so, in what place, when, and whether for purposes of business, health, or pleasure?
b. Does the person contemplate a change of residence? If so, when, to what place, and why? (That is—Whether for purposes of business, health, or pleasure.)
 13. a. AGES and state of health, if living, of the person's PARENTS.
b. If dead, at what ages, and of what diseases?
FATHER AND MOTHER: a. Age and state of health, if living. b. Age at death. c. Cause of death.*
- Q***In giving the cause of death, avoid all indefinite terms—such as "General Debility," "Change of Life," "Fever," "Exposure," etc. If the word Childbirth be used, how long after delivery did death occur, and were there any symptoms of Disease of the Chest, such as Cough, Expectoration, etc.
14. **BROTHERS AND SISTERS:** How many has the person had? How many living? Their ages and state of health? How many are dead?
At what ages did they die? Of what Diseases did they die?
 15. a. AGES at death of GRANDPARENTS.
b. Have any of them, or have any UNCLES or AUNTS, to your knowledge, died or suffered from Consumption, Scrofula, Insanity, Gout, or any Pulmonary or Hereditary Disease?
c. If so, what was the age of such person or persons at death?
d. The cause of death? Answer in detail.
 16. Has the person's weight recently increased? Or diminished? If so, to what extent and how rapidly?
 17. Is the person now and usually in good health? When was the person successfully vaccinated?
 18. Has the person had the usual diseases incident to childhood?
 19. Has the person now, or has he ever had, any of the following Disorders or Diseases? If yes, state disease, date, duration and severity of illness: Fits or Convulsions; Paralysis or Palsy; Delirium Tremens; Sunstroke; Apoplexy; Insanity; Spinal Disease; Asthma; Pleurisy; Inflammation of the Lungs;

does not exist as I state it. Or it is equally competent for me to say, not as a condition of the contract, but as an expression of opinion,

Spitting or Coughing of Blood ; Consumption ; Jaundice ; Chronic Diarrhoea ; Dysentery ; Fistula in Ano ; Rupture ; Stricture of Urethra ; Gravel or Calculus ; Syphilis ; Rheumatism ; Gout ; Cancer ; Erysipelas ; Dropsy ; Yellow Fever ; Small Pox.

20. Has the person ever had any illness, local disease, or personal injury ? If yes, state nature, date, duration and severity of the attack.
21. Has the person had INFLAMMATORY RHEUMATISM ? If yes, state *number, dates, duration and severity* of the attacks, and whether accompanied by Cough, Shortness of Breath, Pain in the Chest, or Palpitation of the Heart.
22. Has the person now, or has he ever had, any difficulty with Eyesight or Hearing ?
23. Have the person's habits of life ever been intemperate ?
24. What is the practice of the person as regards the use of spirituous or malt liquors ? State the **KIND** and **AMOUNT** consumed daily.
25. Is the person now, or has he ever been, engaged in or connected with the manufacture or sale of Beer, Wine, Whiskey, or any other Intoxicating Liquors ?
26. a. Does the person use Tobacco or Opium ?
 - b. If so, which, in what form, and how much consumed daily ?
27. a. Name and Residence of Physicians whom the person has ever consulted.
 - b. When and for what were they consulted ?
 - c. Does the person expressly waive all provisions of law forbidding any physician who has attended him from disclosing all information which he thereby acquired ?
28. Does the person, in consideration of the agreements contained in the Policy hereby applied for, agree that any allowance for the reserve value which may be due or made in the case of the lapse of Policy proposed, shall be applied to the purchase of paid-up assurance, payable at the same time as the original Policy and not to the purchase of temporary assurance ; and specifically waive and relinquish all right or claim to any other surrender value than that provided in the Policy, whether required by the statute of any State or not ?
29. Do you wish a Policy in the " Southern Class " of this Society, with permission to reside and travel, at all seasons of the year, in any Southern state, it being understood and agreed that in the making of dividends upon policies of this class, regard shall be had to the mortality actually experienced in said class, compared with the mortality of the rest of the assured ?

IT IS HEREBY DECLARED AND AGREED:—That all the statements and answers written on this Application are warranted to be true, and are offered to the Society as a consideration of the contract, which shall not take effect until the first premium shall have been paid during the life and good health of the person herein proposed for assurance.

 **NOTE BEFORE SIGNING.**

The **HUSBAND** may sign for his **WIFE**
or the **FATHER** for his **CHILDREN**.

Dated at 188

This risk is approved and recommended by
me,

**Person for whose benefit }
Assurance is made. }**

**Person whose life is to }
be Assured. }**

"I believe such facts to exist," without expressly guaranteeing their existence. This is called a representation, which not only does not bind the party making it to perfect accuracy, but, if to a collateral and irrelevant matter, may be entirely untrue without vitiating the policy.¹ "A warranty in insurance enters into and forms part of the contract itself. It defines, by way of particular stipulation, description, condition or otherwise, the precise limits of the obligation which the insurers undertake to assume. A representation is, on the other hand, in its nature, no part of the contract of insurance. Its relation to the contract is usually described by the term 'collateral.' It may be proved, although existing only by parol, and preceding the written instrument. Unlike other verbal negotiations, it is not merged in nor waived by the subsequent writing. This principle is in some respect peculiar to insurance, and rests upon other considerations than the rule which admits of verbal representations to impeach written contracts on the ground of fraud. Representations to insurers, before or at the time of making a contract, are a presentation of the element upon which to estimate the risk proposed to be assumed. They are the basis of the contract—its foundation, on the faith of which it is entered into. If wrongly presented, in any respect material to the risk, the policy that may be issued thereon will not take effect. * * * As this defence" (that of misrepresentation) "relates entirely to the substance, and not to the letter of the contract, it can only prevail by proof of some representation material to the risk, and that it was untrue in some material particular."² And a material representation incorporated in the policy, or made a condition on which the policy is granted, is to be treated as a warranty.³

¹ See Wh. on Cont., § 212; Texas Ins. Co. v. Davidge, 51 Tex. 244.

² Campbell v. Ins. Co., 98 Mass. 381, adopted in Bliss on Life Ins., § 41.

³ United Brethren Soc. v. White, 100 Penn. St. 12; see Mutual Ins. Co. v. Snyder, 93 U. S. 393.

That an averment by a married man that he is single is a warranty, see Jeffries v. Ins. Co., 1 McCrary 114.

That where the applicant is referred to the medical examiner, the company is bound by the examiner's parol explanations, see Connecticut Ins. Co. v. Murdy, 89 Penn. St. 363.

In Knecht v. Ins. Co., 90 Penn. St. 118, it was held that a mere *declaration* that the insured had not practiced and would not contract any pernicious habit obviously tending to shorten life was not, in a case where the insured after the insurance, became addicted to drunkenness, ground to hold the po-

§ 904. *Effect of representations to medical examiner and to common agent.*—Representations in order to avoid, must be material to the policy avoided, though he died of *delirium tremens*. *s. r. Reichard v. Ins. Co.*, 31 Mo. 515.

But in *Knight v. Mutual Life Ins. Co. of New York*, 9 Weekly Notes 501, it was held that a *guaranty* by the insured that he will not contract any pernicious habit, is equivalent to a warranty; and, in case of violation of such *guaranty*, the policy is properly forfeited under a stipulation that, if any of the statements in the application are false, the policy shall be forfeited. It was further held that it is not within the power of the general agent of an insurance company, by declarations that the insured has complied with his contract, and that his policy is good, to estop the company from setting up, as against one who purchased the policy on the faith of such assurance, that the policy is void because of misrepresentations on the part of the insured at the time of issue of the policy.

In *United Brethren Soc. v. White*, 100 Penn. St. 12, it was held that representations, when incorporated in an application, and when material, are to be regarded as warranties.

In *Fitch v. American Popular Life Insurance Co.*, 59 N. Y. 557 (1875), reported in 5 Big. Ins. Cas. 316, the question being that of fraudulent misstatement by the insured, Rapallo, J., said: "There was some evidence tending to show fraud in the statement and in omitting to mention certain facts, but this evidence was in our judgment, far from being of that conclusive character and so uncontested as to have justified the judge in nonsuiting the plaintiff. The main facts relied upon were that some six years before the policy was applied for, the deceased had had an inflammation of the eyes, termed by his physicians conjunctivitis. The evidence tended to show that this was caused by sand being thrown in his eyes while in the army, in 1864, and that he had been discharged from the army for this cause; that this conjunctivitis was merely a temporary inflammation of the eye, of which he had long since been cured, and that it was not calculated to affect the duration of life; that he had been confined in the hospital, in Virginia, by reason of this inflammation of the eyes, in October 1864, when he was furloughed, and that he was treated for the same complaint by a Dr. Benson, in November, 1864, and was finally discharged from the army in May 1865. It was attempted to be proved that his eyes bore traces of his having had iritis at some period of his life, but this proof was controverted by evidence, and therefore would not have justified a nonsuit. The policy was issued in November 1870, and it is not claimed that he then had any disease of the eye. The application contained an inquiry whether the deceased 'had ever had any illness, local disease, or injury in any organ,' which question he answered in the negative. This is claimed to have been a misrepresentation and breach of warranty, by reason of which the plaintiff should have been nonsuited. The president of the defendant, who appears to have been a physician, enumerates about fifty parts of the human body which come under the denomination of organs, including among others, the eye, the nerves, bones, cartilages, veins, glands of the skin, etc., and it is claimed by the defendant that an injury

points to which the insurance reaches ; and the question of materiality is governed in a large measure by the limits and circumstances of the

to, or disease of any of these organs at any previous period necessarily renders the answer given by the deceased a breach of warranty or a misrepresentation which should avoid the policy. If a finger had been broken, the skin injured or a vein cut at any period of the applicant's life, the policy would according to this doctrine be void.

" We think that according to the construction which we have put upon the contract in question, the judge would not have been justified in holding that the omission to mention a temporary injury to the eye by sand being thrown into it, which had produced inflammation six years before the policy was applied for, and which was then cured, was conclusive evidence of fraud, or a breach of warranty sufficient to avoid the policy. If of any importance, it was at most evidence of fraud, to be submitted to the jury.

" These policies are provisions made usually by men of slender means, for the benefit of their families in case of death ; they sometimes devote their small savings for many successive years to paying the premiums. To justify us in holding that all the answers given to the multitude of questions asked in the case before us are warranties, and that a mistake or unintentional omission as to any of them should avoid the policy, the clearest, and most unequivocal and unqualified language should be employed in the policy and conditions. A company cannot be permitted in the same papers to say to the assured, to induce him to enter into the contract, that nothing but fraud or intentional misstatements shall avoid his policy, or that payment will be contested only in case of fraud, and when the claim for payment is presented, to set up as a defence a merely technical breach of warranty in relation to some trivial matter. In a case like this, considering the number and character of the inquiries made of the insured, if the answers were all held to be warranties, it would, in substance, be optional with the company whether to pay or not, for it would be a marvel if some flaw could not be found in the application. No intelligent man would knowingly invest his earnings in so precarious a security.

" Another alleged ground of nonsuit was the response of the applicant to the question, ' Family physician and each one who has ever given the party medical attendance ? If neither exist name some medical, an acquaintance, who knows the party well.' The answer was, ' Have none.' This answer was upon its face incomplete. It applies only to the call for the name of the family physician. Whether the suppression of the name Dr. Benson, who had attended the applicant for inflammation of the eyes, in November 1864, and again in 1867, for some other complaint not mentioned, and of the doctor who was called in to visit his boy in 1870, and attended him twice, at Troy, were fraudulent suppressions, were questions for the jury. If the defendant had desired a fuller answer to the question it should have insisted upon it at the time. The same remarks apply to the statements of the applicant as to his vocation and his residence ; and to the question, whether he had been medically examined for the army or navy, or with reference to insurance, and to his omission to mention the fact of his discharge from the army. There was

inquiry. Hence when a medical examiner is employed to examine a person applying for an insurance, statements made by such party

no such conclusive evidence of fraud or intentional misrepresentation as required the court to pass upon the fact. The refusals to charge as requested are covered by the remarks already made; and this disposes of all the material exceptions except the rejection of evidence that Fitch, the deceased, committed suicide.

"The policy contained no stipulation that it should be void in case of the death of the insured by suicide. It was not taken out for the benefit of Fitch, but of his wife and children. Although they were bound by his representations and any fraud he may have committed in taking out the policy, the policy having been obtained through his agency, yet they were not bound by any acts or declarations done or made by him after the issue of the policy, unless such acts were in violation of some condition of the policy. We have examined the various grounds upon which the defendant claims that this evidence was admissible, but are of opinion that they are not sufficient. The order of the general term should be reversed and the judgment entered upon the verdict, affirmed, with costs."

In *Mutual Benefit Life Ins. Co. v. Robertson*, 59 Ill. 123 ; 4 Big. Ins. Cas. 28, the wife of the party whose life was insured, and for whose benefit the policy was obtained, stated to the agent of the company at the time of procuring such a renewal receipt, in answer to his inquiry on the subject, that her husband (who was absent in another state) had written to her, and that he was in his usual health. It was ruled by the Supreme Court that the statement, not being incorporated into the policy, was merely a representation; and the failure to communicate even a material fact, if unknown to the party, will not vitiate the policy.

"There was, then," said Thornton, J., "no warranty of good health. A warranty is in the nature of a condition precedent; it must appear on the face of the policy; or if on another part of it, or on a paper physically attached, it must appear that the statements were intended to form a part of the policy; or if on another paper, they must be so referred to in the policy as clearly to indicate that the parties intended them to form a part of it. A warranty cannot be created nor extended by construction: *Reynolds Life Ins.*, 85 *et seq.*; *Campbell v. New England Insurance Co.*, 98 Mass. 381 ; 1 Big. Ins. Cas. 229 ; *Burritt v. Saratoga Insurance Co.*, 5 Hill 188 ; *Jefferson Insurance Co. v. Cotheal*, 7 Wend. 72.

"The only proof to sustain the charge of fraud and misrepresentation was the remark of appellee to the agents of the company, that she had received a letter from the deceased; that he was in Missouri, and in his usual health. The deceased was a travelling agent, and the fact of his absence from home was known to the agents of the company. This statement was verbal, and is not referred to in the policy, and must be deemed to have been a mere representation. It was independent of the contract, and collateral to it. It may have been untrue, and yet not avoid the policy. It must be proved to have

not relative to his health or physical condition will be held immaterial. But when on the pecuniary condition of a party depend his compensation, and that it induced the risk: *Farmers' Insurance Co. v. Snyder*, 16 Wend. 481. Did it induce the risk? The evidence satisfies us to the contrary."

To this Mr. Bigelow, 4 Insur. Cas. 29, adds the following note: "The dictum of the court in this case that, the failure to communicate a material fact, unknown to the assured, will not vitiate the policy, is probably too broad. That would be true it seems, where no inquiry was made upon the point, if the non-disclosure were not fraudulent. See the elaborate examination of this question in *Hartford Insurance Co. v. Harmer*, 2 Ohio St. 452; *Rawles v. American Life Insurance Co.*, 1 Big. Insurance Cas. 549, 558; also *Cheek v. Columbia Ins. Co.*, 1 Cent. Law J. 465, and note by the present writer. But the rule is held otherwise where there is a specific inquiry, and a definite statement of a material fact in reply. In such case an untrue answer, however honestly made, will in general avoid the policy: *Ducket v. Williams*, 2 Cromp. & M. 348; s. c. 3 Big. Insurance Cas. 8; *Vose v. Eagle Life Insurance Co.*, 6 Cush. 42; s. c. 1 Big. Insurance Cases 161; *Campbell v. New England Life Insurance Co.*, 98 Mass. 381; s. c. 1 Big. Insurance Cases 229, 243. See also *Davenport v. New England Life Insurance Co.*, 9 Cush. 341, and *Day v. Mutual Benefit Life Insurance Co.*, 4 Big. Insurance Cas. 15, where the statements of the application were held to be part of the contract. This is clearly true in those cases where the fact inquired of was within the knowledge of the assured; as where he has decided symptoms of a particular disease, and is not aware of the nature of the symptoms: *Vose v. Eagle Life Insurance Co.*; *Campbell v. New England Life Insurance Co.*; *Day v. Mutual Benefit Life Insurance Co.*, *supra*. The rule may be otherwise where the fact cannot be known by the party; as in those cases where the truth of a statement concerning health can only be revealed by a *post-mortem* examination: *Hutchinson v. National Life Assur. Soc.*, 3 Big. Insurance Cases 444; *Sprott v. Ross*, Id. 421. So, doubtless, where the statement was only the expression of opinion, as appears to have been the fact in the principal case. If, however, the applicant for insurance will take upon himself to make a direct statement of fact, in answer to an inquiry, not knowing whether the same be true or false, though supposing it to be true; and the policy contains the common provision that it is based upon the statements of the application, and that if the answers therein made are in any respect untrue, it will be void; it is apprehended that the ignorance of the applicant that his statement was not true must (except perhaps in cases like *Hutchinson v. National Life Assur. Soc.*), be fatal to any claim against the insurers. See *Campbell v. New England Life Insurance Co.*, *supra*. This is true, *a fortiori*, where the statements are made or held to be warranties, as in *Day v. Mutual Benefit Life Insurance Co.*, *supra*."

In *Knickerbocker Ins. Co. v. Trefz*, Sup. Ct. U. S. 1881, 11 Ins. L. J. 17, the applicant answered that he was "never sick." It was maintained that he had had a sunstroke. It was held not to be error to instruct the jury that in the

fort and power of self-support in sickness, his statements as to his pecuniary condition are material.¹ Ordinarily, also, a party is as case of a foreigner, ignorant of the language, they might consider that fact in determining the sense in which the word "sick" was used.

In *National Life Ins. Co. v. Minch*, 53 N. Y. 241, which was an action by an insurance company to recover back money it had paid under fraudulent representations, it was said by Church, C. J., "I am unable to concur with the ruling of the learned judge at the circuit, which was sustained by a majority of the court at general term, that there was not evidence sufficient to go to the jury to charge fraud or conspiracy upon the deceased in obtaining the policy. A conspiracy was alleged between the deceased, her husband and Dr. Potter, the medical examiner for the plaintiff, to fraudulently obtain a policy of insurance upon the life of Mrs. Minch, knowing that she had, at the time, a cancer, which was an incurable disease. It was not necessary to establish the conspiracy against the three. It was sufficient to establish that the policy was obtained by fraud, for which the deceased was chargeable alone, or in connection with others, and this might be done by direct evidence, or by circumstances from which a jury could reasonably infer it.

"The application contained the questions whether she had had any serious illness, local disease, or personal injury, and whether she had then, to the best of her knowledge or belief, any disorder, or any infirmity or weakness tending to impair her constitution, to all of which the answer was in the negative. There was evidence tending to show that she had, at the time, a cancer in her breast, which she was aware of, and of which she afterwards died.

"There was conflicting evidence as to the fact of a cancer, and also as to whether the deceased knew it, which should have been submitted to the jury. The fact that she signed the application, that she was examined by Dr. Potter for the purpose of making the medical certificate, her constant communication with her husband, who, with the doctor, was active in making the application and procuring the policy, and other circumstances, were pertinent to go to the jury, upon the question of her knowledge of the general fact that an insurance was being effected upon her life, and also of the substance of the application which she had signed. It is true there was evidence tending to show that the application was not, in fact, read over to her, and that she did not know what it contained, but her ignorance of its nature was far from being conclusively proved.

"Again, if the husband, as an agent of the wife, procured the policy by fraud, he cannot retain the benefit of it and be relieved from the consequences of the fraudulent means by which it was obtained. It is established that an innocent principal cannot take advantage resulting from the fraud of an agent, without rendering himself civilly liable to the injured party. 10 N. Y. 34; *Graves v. Spier*, 58 Barb. 349. If the husband obtained the policy by a fraud, acting as the agent of his wife, he occupies the position of claiming to keep money, as her legal representative, which he fraudulently obtained as her agent. He is

¹ *Valton v. Loan Co.*, 1 Keyes 21. See *Medical Examinations for Life Insurance*, by J. A. Allen, M. D., New York, 1872.

much bound by the representations of his agent, when acting for him in a business capacity, as he would be by his own representations.¹ A:

defending this action upon her title to the policy, which, if procured by fraud, is invalid.

"The court also erred in refusing to allow the plaintiff to go to the jury upon the question, and to charge them that if from the evidence they believed it was known by the husband, Dr. Potter and the deceased, that she had a cancer which was incurable, and that there was an understanding between them that they were to obtain an insurance upon her life, at the time knowing she was incurably diseased, the plaintiff was entitled to recover. The defendant was a laborer in a saw mill. This insurance and another were procured upon the life of his wife, at the suggestion of his employer, whose wife was the certifying friend. The medical examiner was a brother-in-law of the employer, who first applied to the agent about a policy, and accompanied the husband afterward to the agent on the same business, and there is evidence that he procured the signature of the deceased to the application. He had attended the deceased as a physician, and, it is claimed, treated the disease as a cancer. It is also claimed that the defendant and his wife went to Rome, the fall before, to consult a cancer doctor under his advice, and there was other evidence proper for the jury tending to show that all those persons supposed and believed that the deceased had a cancer at the time of the policy, and also that she in fact died with that disease about three months afterward. If Dr. Potter, the husband and deceased knew that the latter had an incurable cancer, and acted in concert in procuring the policy, the plaintiffs were entitled to recover. Even if the company would otherwise be chargeable with the knowledge of Dr. Potter as their agent, they would be relieved from it under such circumstances. If a person colludes with an agent to cheat the principal, the latter is not responsible for the acts or knowledge of the agent. The rule which charges the principal with what the agent knows is for the protection of the innocent third persons, and not those who use the agent to further their own frauds upon the principal. If Dr. Potter did not know that the cancer existed, and did not collude with the deceased or her husband, as he testified, then he is innocent of any wrong, and the plaintiff is not injured; and if he did, the defendant is not to be injured by his guilty knowledge. It is not intended to intimate an opinion upon the facts, or any of them; the evidence was conflicting as to nearly all of them. All that we intend to say is, that it was not a case for a nonsuit. It should have been submitted to the jury. The court should not nonsuit a plaintiff except in cases where a verdict would be set aside as against evidence. This is not such a case.

"It is unnecessary to characterize this action as one in contract or for fraud. In either aspect we think fraud must be established in obtaining the policy which was unknown to the plaintiff when the money was paid. The alleged fraudulent statement of the cause of death is pertinent mainly not as constituting a substantive cause of action, but as evidence of the original fraud, and

¹ Wh. on Ev., § 1171.

exception to this rule exists in all cases in which the agent's allegiance is not exclusive to the party on whose behalf the representations are made; and this is eminently the case when an agent for an insurance company undertakes to act as agent for a party making application to such insurance company for an insurance. In such cases the courts, in order to charge the insured with such representations, require that the proof that they were specifically authorized should be distinct and strong.¹

§ 905. *Fraud not necessary to defeat claim.*—It is not necessary to make a party liable for a false representation that it should have been fraudulently made. The reasons are obvious. (1) To require proof of fraud would substitute an uncertain test, that of the party's mind at the time, for a certain test, that of the truth of a specified statement. (2) It is the statement, not its motive, on which the insurer relies.²

as a circumstance calculated to prevent inquiry. A policy of insurance is an executory contract. The time for insisting upon the breach of any warranty contained in the original application was when the claim was made for the execution of the contract. Mere ignorance of a fact which might have enabled the company to defend an action upon the policy on account of such breach is not such a mistake of fact as will enable it to recover back the money. It will be presumed that the company either knew the fact or intended to waive any such defence, and voluntarily paid the money. Otherwise there would be no end to controversy and litigation, and the party receiving the money would hold it subject to a lawsuit until the statute of limitations intervened. This rule has no application except in the absence of fraud in procuring the policy and of fraudulent representations made to obtain the money, which were designed to, and did have, the effect of preventing inquiry. Phillips on Ins. 593; Angell on Fire and Life Ins., § 409; 27 Barb. 354. Sutherland, J., in the last case, says: "In this action they must be deemed by the payment to have settled or waived all questions of law or fact, as to the validity of the original contract, except fraud, which they had the means of raising when they paid the loss. 1 Wend. 357; 1 Esp. 279; 20 J. R. 196. The pleader evidently took this view in preparing the complaint, and I think he was right."

¹ Wh. on Ev., § 1172.

² Bliss on Life Ins., § 54; Campbell v. Ins. Co., 98 Mass. 38

In *Moulton v. American Ins. Co.*, decided in 1880 (101 U. S. 708; 9 Weekly Notes 81), it was held by the Supreme Court of the United States that the question of the fact of disease in cases of conflict of parol testimony is for the jury. It was also held that the insurer (or his representatives) is not bound by the statement of his family physician as to his health. The opinion of the court was given by Mr. Justice Strong, as follows:—

"As the judgment which was entered by the Circuit Court was in accord-

§ 906. *Suppression equivalent to misstatement.*—Notwithstanding some early expressions of opinion to the contrary, it may now be

ance with the verdict, the only assignment of error which we have to consider is the first, namely, that the court erred in giving to the jury a binding charge to return a verdict for the defendants. The policy upon which the suit was founded contained the following stipulation: ‘And it is hereby declared and agreed that if the representations and answers made to this company in the application for this policy, upon the full faith of which it is issued, shall be found to be untrue in any respect, or that there has been any concealment of facts, then, and in such case, this policy shall be null and void.’ The application referred to contained the following interrogatories and answers among others: ‘Seventh. Has the party’ (Louis Moulor, the person whose life was insured) ‘ever been afflicted with any of the following diseases? Answer yes or or no to each. Insanity? No. Gout? No. Rheumatism? No. Palsy? No. Scrofula? No. Convulsions? No. Dropsy? No. Smallpox? No. Yellow fever? Yes. Fistula? No. Rupture? No. Asthma? No. Spitting of blood? No. Consumption? No. Any diseased of the lungs or throat? No. Or of the heart? No. Or of the urinary organs? No.’

“Interrogatory twelfth. ‘How long since the party was attended by a physician? For what disease or diseases?’ Answer. ‘Not since the year 1847, when he had the yellow fever.’

“After these answers the application contained the following: It is hereby declared and *warranted* that the above are fair and true answers to the foregoing questions, and it is acknowledged and agreed by the undersigned’ (Louis Moulor), ‘that this application shall form a part of the contract of insurance, and that if there be in any of the answers herein made any untrue or evasive statements, or any misrepresentations or concealment of facts, then any policy granted upon this application shall be null and void.’

“The defence set up at the trial was that some of the answers to the interrogatories contained in the application were untrue, and this defence was attempted to be supported by the testimony of a single witness, Dr. Mathieu. He testified that he had been the family physician of Moulor since 1855. (The policy was issued June 17th 1872.) He testified further, that in 1858 and 1859, he attended Moulor for chronic asthma, manifestations of the first stage of consumption, and also treated him for scrofula. The witness did not testify positively that Moulor had the diseases for which he treated him, but his testimony was that Moulor never learned from him or any other physician, and that he never suspected or had the remotest idea that he was affected with any such diseases; on the contrary, that he always boasted of himself as being a strong, healthy and robust man. The witness further testified that the asthma Moulor had was the dry, nervous asthma, attended by no expectoration; that there was nothing connected with it to make the patient believe he had it. As to the first stage of consumption, there was no softening of the tubercles, and, therefore, no expectoration of the tuberculous matter. As to the scrofula, that his was a very mild diathesis. This was all the testimony adduced and now relied upon to prove that the answers in the application were untrue. There

regarded as settled that a suppression of a material fact is equivalent to a misstatement when the effect of it is to make the representation

was, however, in evidence the statement of two medical examiners attending the application. They represented the assured as in perfect health, and as never having had any constitutional disease except yellow fever, and a curvature of the spine in his early youth, and as having no predisposition, either hereditary or acquired, to any constitutional disease.

" We are of opinion that this evidence did not warrant a peremptory instruction to the jury to find a verdict in favor of the defendants. The testimony of Dr. Mathieu was parol. Its credibility as well as its effect was for the jury, especially as it was not positive and unqualified that Moulor had had the diseases for which the witness had treated him, and as the statements of the examining physicians which were in evidence tended in some degree to prove that he never had. The jury might, perhaps, have drawn the conclusions from Dr. Mathieu's testimony that there had been only predisposition to the diseases, and not the diseases themselves. He stated in regard to the asthma for which he treated Moulor, that it was attended with no expectoration, and that there was nothing connected with it to make the patient believe he had it. In regard to the first stages of consumption, according to his statement there was no expectoration of tuberculous matter. He does not state there was any cough or pain in the chest. There were, then, no external symptoms of either of the three diseases mentioned. Had scrofula existed it would seem probable the patient must have known it. Yet the doctor states he did not suspect, or have the remotest idea that he was affected with either of the diseases. That he was treated for them is not conclusive that he had them. The most skilful treatment sometimes is given when the existence of a particular disease is only suspected, not known, and when afterwards it appears the physician was mistaken.

" For these reasons we think the testimony was not such as to justify a withdrawal from the jury of the inquiry whether the answer to the seventh interrogatory was untrue.

" Nor was it sufficient to enable the court to conclude, without reference to the jury, that the answer to the twelfth interrogatory was untrue. The entire interrogatory should be considered as one. It was, 'How long since the party was attended by a physician? For what disease or diseases?' To this the answer was, 'Not since the year 1847, when he had the yellow fever.' It may well be that the applicant understood the interrogatory as asking information respecting attendance for a particular disease or diseases and their description, especially as the thirteenth interrogatory sought information respecting the party's *usual medical attendant*, and the name of that attendant was truly given.

" Upon the whole, therefore, we think the case should have been submitted to the jury on the evidence."

In *Swift v. Ins. Co.*, decided by the New York Court of Appeals in 1875, 63 N. Y. 186; 5 Big. Ins. Cas. 393, one of the questions involved related to the effect of suppression of material facts. Folger, J., in giving the opinion of the court said: "The taker of a life policy from insurers, when he asks pay-

as a whole untrue.¹ Hence even a negligent concealment of a material fact, when thereby the truthfulness of the entire representation is ment after the death, is liable to an inquiry into the previous life and condition of the subject insured at the time of the application for the insurance, or at a prior time, not remote therefrom. All facts may be proven which tend to show that condition, because he has a legal relation to them, and they legitimately affect his right to the contract which he has got. As he presents the subject of insurance to the insurers, as one who for him may make answer to their material inquiries, and as one who to the extent of his knowledge will make answers thereto truthfully, he has a legal relation to the subject of insurance, and is bound by his answers of material facts, and is affected by his knowledge and his answering according thereto, or variant therefrom. Hence it is that any prior fact or act not too remote is proof against the policy-holder of knowledge concealed by the subject of the insurance. Hence it is, too, that any statement which is part of the *res gestae* of such prior fact or act tending to characterize and explain it, is also proof thereof, though unsworn to. Facts occurring after the insurance has been effected may be evidence, inasmuch as all facts which are material are competent to be proven. But the subsequent statements of the subject of insurance, not connected with a contemporary act or fact, are then but hearsay, for in such case the policy-holder has no such legal relation to the subject as that the latter may affect him by his unsworn declarations; and the declarations have no such connection with any prior act or fact as to be a part of the *res gestae* thereof."

In *Lee v. Guardian Life Ins. Co.*, before the United States Circuit Court for California, in March 1875; 5 Big. Ins. Cas. 19; the question of falsity of representations and of fraud was raised. In his charge to the jury, Sawyer, C. J., said:

"It is claimed on the part of the defendant that these statements are false in several particulars. One question is, have you had any of the following diseases—among others, ‘spitting of blood, rheumatism, palpitation of the heart, or disease of any vital part?’ The answer is ‘No.’ ‘Are you subject to cough or shortness of breath?’ The answer is, ‘No.’ ‘Have you ever had any serious illness, or personal injury?’ The answer is, ‘Broken leg when about thirteen years old.’

"You have heard the testimony on this subject, gentlemen: In addition to your general verdict, I have concluded to submit to you four interrogatories, upon which you are directed to find specially, and my further remarks will have reference to these special findings. I will read them now. Question: Did Mr. Wright, the defendant's solicitor of applications, write the answers in the application, in accordance with the answers to the questions therein propounded, and information given to him for that purpose by Andrew Lee?

"Question. Did Mr. Wright induce Andrew Lee, while ignorant of the

¹ *Daniels v. Ins. Co.*, 12 CUSH. 416; *Mallory v. Ins. Co.*, 47 N. Y. 52, and other cases cited, May on Insurance, §§ 200 *et seq.*; *World Ins. Co. v. Schultz*, 73 Ill. 586; 5 Big. Ins. Cas. 104. And see discussion in Wh. on Cont., §§ 217, 249-50.

impaired, vitiates the insurance. But the fact concealed must be one which the defendant either knew or was bound to know.¹

contents, to sign the application, by saying that it was only a form to make known his desire to insure, and did he so sign?

"Question. Did Andrew Lee, at the time he signed the application, or at any time before the delivery and acceptance of the policy, know what answers were inserted in the application to the questions therein propounded? If not did he have an opportunity to know?"

"Question. Did Andrew Lee take the application with him to Vallego, and return it, or cause it to be returned by mail, express or otherwise, to the defendant's office at San Francisco, with the certificate purporting to be made by Dr. McPhee, appended?

"Gentlemen: These are all questions of fact; on these questions there is a conflict of testimony; it is for you to determine from that testimony which is right and which is wrong.

"I will call your attention, as I deem it my duty to do, to some of the salient points of that testimony, and explain to you what the tendency is, and leave it to you to say what it proves, as it is your province alone to determine the weight to be given to it, and the facts it establishes.

"If there are any contradictions between the testimony given by any of these witnesses on former trials—substantial differences—and the testimony on this trial, you are entitled to consider that also. I mean by 'substantial differences,' differences in the main important facts of the case. They may differ in the form of the statement; they may differ in recollection as to the precise time and the precise minute of circumstances of different trials, but upon the great and essential facts in issue, can they differ without throwing suspicion upon the testimony? If you find any differences other than mere formal ones, differences in their testimony upon the main essential facts, that is for you to consider in determining the credibility to be given to the respective witnesses; and if you find any one witness who has wilfully, knowingly testified to a falsehood in any one particular you are justified in rejecting his testimony in all other particulars.

"Then as to the manner of the witnesses on the stand—their relation to the subject-matter; all these circumstances, taken in connection with the intrinsic probabilities of the case as developed by the evidence, are matters for you to consider in determining which is right and which is wrong; and what, if any, weight shall be given to any of the circumstances. It is my duty to point out the salient points of the testimony and call your attention to them so that you may reflect upon them in a proper manner, and then leave you to determine the facts upon the testimony. You will answer these specific interrogatories by determining which of these parts is correct on these various points. To recapitulate: If you find that there is a substantial falsehood in the answers to

¹ *Wheelton v. Hardisty*, 8 E. & B. 255; see *Bliss on Life Ins.*, § 866.

"Concealment of habits, the effect of which on health must, or ought to be

§ 907. "*Good*" health does not mean "*perfect*" health.—A statement made by a party applying for a life insurance that he is in "good these questions, in the application which I have mentioned, in a matter material to the risk, you must find a general verdict for the defendant. If you find these are all substantially true, then you must find, for the testimony satisfies your minds."

There was a general verdict for the defendant, but the company, as an act of grace, at the suggestion of the judge, bore their own costs of the proceedings. They would have done more wisely, and the costs to them would have been less if they had paid the whole money in the first instance without objection.

In "Professional Recollections, by a former member of the council of the Incorporated Law Society" (London, 1883), p. 53, we have the following :

"Life insurance companies have become more cautious of late years in the character of the risks which they accept. There is a growing tendency on the part of all respectable companies to treat every policy, when once accepted as indisputable, that is, never to dispute payment afterward, under any circumstances. Exercising caution in the first instance, they are enabled to act with corresponding liberality afterwards, and in so doing they best consult their own interest, for, if an insurance company earns a name for being contentious the public will wisely avoid it.

"Before this principle was so generally recognised as it is now one John Goslett who had been a subaltern in a line regiment, but had retired and was enrolled in one of the veteran battalions, insured his life in a London insurance office for 1500*l*. He sent in his proposal and medical certificates as a perfectly sound healthy life, and the proposal was accepted and the premium assessed at the ordinary rate for a healthy life. He lived many years afterwards, and on his death his executors produced the probate of his will to the office as proof of their title to receive the sum assured. The will itself on such occasions is seldom or ever read. There is no necessity for it; the office contents itself with looking at the mere probate act annexed to the will to see who are the executors. However, on the present occasion, the secretary chanced to cast his eyes over the will, and there found an elaborate reason given by Goslett for effecting the insurance. The reason alleged was his shattered health, owing to fever contracted in the tropics whilst on military service, and his continued suffering, which made his life more than ordinarily insecure. Apprehension of early death, he said, and anxiety for his family had induced him to make provision for them by means of the insurance. The directors of the office with which the policy had been effected thereupon considered that something like a fraud had been practised upon them, and were inclined to dispute the policy altogether; but having regard to the fact that Goslett had lived for many years, notwithstanding his prediction of an early death, they offered formally to pay the executors the whole sum assured, less such a sum as Goslett would have paid, in the shape

known to all medical men, may be just as fatal to a policy as the concealment of a serious disease. Although they may not always be included in the questions

health" does not mean that he is in "perfect health."¹ If it did, there is no policy conditioned upon a statement of good health being given of increased premium, had the facts been disclosed at the time. It was a fair offer, but it was refused; and, relying on the sympathies of a jury, an action was brought by the executors against the company. The cause was actually carried to trial at the Assizes at Croydon; but the presiding judge, when told of the offer, would not allow the case to go to the jury, and insisted on the executors accepting the offer. In *The Union Central Life Ins. Co. v. Cheever*, 36 Ohio St. 201, it was held that where a man insured his life for the benefit of his wife, his statements sometime prior to the insurance as to his ill health were not admissible for the defendant in a suit brought by the wife, after her husband's death, on the policy. It was held that it was inadmissible for the plaintiff's counsel to read publications, not in evidence, of life insurance companies, likely to prejudice the defendant."

put by the office, yet the law will equitably hold that the insurers should be made acquainted with all circumstances which might reasonably affect the risk. Concealed habits of drunkenness have thus given rise to medical questions of considerable importance; and in one remarkable instance which will be mentioned hereafter, a question arose as to whether the practice of opium-eating, which had been concealed from the insurers, had or had not a tendency to shorten life.

"Some recent exposures, partly of a civil, and partly of a criminal nature, have rendered insurance offices much more strict in their inquiries. In the rules already quoted, special information is demanded upon the existence of material circumstances touching health or habits of life, and whether the person is, or is not of temperate habits. Any facts bearing upon these questions, if known to the medical attendant, must of course be stated. The existence of such habits must be known to the person himself, and the declaration which he signs is so explicit that, if intentionally concealed by him, no individual can reasonably complain of the voidance of the policy and the forfeiture of the premiums.

"The case of *Von Lindenau v. Desborough*, tried in the Court of King's Bench before Lord Tenterden in October 1828, shows that medical men are bound, at the risk of invalidating the policy, to state the exact bodily condition, so far as it can be obtained by observation, of the person whose life it is proposed to insure. It appears that on the 16th June 1824, a policy for 3208*l.* was effected, in the Atlas office, on the life of the Duke of Saxe Gotha, at the time he was residing abroad. The Duke died on the 17th February 1825, within nine months of the time of effecting the insurance; and the payment of the amount of the policy was refused on account of a material concealment of the exact condition of the insured from the insurers. It appeared in evidence that for some time prior to the insurance, the Duke had been an invalid, and that at

¹ *Galbraith v. Ins. Co.*, 19 Bush 29; *Co-operative Ins. Co. v. Leflore*, 53 Miss. 1.

that would be good, since no one, no matter how robust, is in perfect health. There is no one in whom there are not some seeds of disease; the time it was effected he was childish, and had not spoken for two years. He had labored under some affection of the brain, did not improve in health after the insurance, and ultimately died from an attack of paralysis. The certificate upon which the insurance was granted had been signed by two German physicians, Drs. Dorl and Ziegler. It was to the effect that the general health of the Duke was good; but that he was 'hindered' (gehindert, had an impediment), in his speech, and had an affection in his left eye. It was also stated that he was perfectly free from disease, or symptoms of disease. On inspection of the head, a tumor of large size connected with the inner table of the skull was found pressing upon the brain. This tumor was evidently of long standing, and had probably been the cause of the symptoms and death. Ten ounces of serum were found effused in the brain.

"It appears that before the insurance was effected, an agent in Germany had informed the insurers that the Duke had led a dissolute life, by which he had lost the use of his speech, and, according to some, of his mental faculties also; and on this the office required a payment of nearly double the usual premium. The case of the insurers was that there had been material concealment of the Duke's real condition at the time of effecting the insurance. The late Mr. J. H. Green, who appeared as a witness for the plaintiff, the claimant under the policy, considered, from the history of the case, that there were no symptoms of organic disease, although the symptoms mentioned would lead to a suspicion of disease in the head. In reply to a question by Lord Tenterden, he said if, as a medical man, he had been asked by an insurance company concerning the state of a man's health, who was unwilling to move, who was subject to control and influence, and who had lost his speech, he would have considered it his duty to mention these circumstances. Lord Tenterden then left it to the jury whether there had been any concealment of material facts relative to the Duke's health. The plaintiff was nonsuited, and a new trial subsequently refused."

"There can be no doubt," adds Dr. Taylor, "that the answer here given by Mr. Green was such as every conscientious man must have given under the circumstances. A medical expert appears in court to speak the *whole truth*, to the best of his judgment, and not to make out rightly or wrongly the particular case of the person who summons him. On the other hand, it is obvious that Drs. Dorl and Ziegler gave a most improper certificate. They might not have been able to express any opinion respecting the existence of a tumor in the brain, but they were wrong in suppressing the real state of the Duke. If they knew his actual condition, their conduct was censurable; if they did not know it, they were not justified in signing a certificate at all. Because a man may enjoy at the time tolerable bodily health, facts of this nature, showing great disease of the nervous system, ought not to be kept from the knowledge of the insurers. Imbecility, depending on whatever cause, should always be mentioned."

In *Huntley v. the St. George Ins. Co.* (Newcastle Assizes, 1858, cited in Tidy's Leg. Med. 397), the insured was a medical man, and died three months after

the whole structure of life insurance rests on this assumption, since if death was not in all cases a probable contingency, life insurance as a system would not exist. Hence it has been frequently held that a statement by the insured that he was at the time in good health is not negatived by proof that he was occasionally subject to maladies not in themselves mortal,—*e. g.*, gout.¹ *A fortiori* this statement does not negative “latent unknown disease.”² But it is otherwise with a tendency to a chronic disease which produces bodily infirmity and operates to materially increase the probability of early death.³

the insurance had been effected. Payment was contested on account of the concealment of Bright's disease and of diseased heart. Vegetarianism was supposed to have caused his ill-health. Verdict for plaintiff. [The Lord Chief Baron suggested that in future companies should ask intending assurers, “Are you a vegetarian?”]

In the case of *Willis v. Poole*, which rested on an insurance of the life of Sir Simeon Sturt (Park on Ins. 935), the payment of the policy was contested by the insurers on the ground of the concealment of gout. The insured died within one year of the policy being effected. Verdict for plaintiff (executor of insured). Lord Mansfield, in this case said: “Such a warranty can never mean that a man has not in him the seeds of some disorder. We are all born with the seeds of mortality in us. A man subject to the gout is a life capable of being insured if he has no sickness at the time to make it an unequal contract.” *Tidy's Leg. Med.* 395.

In *Langdon v. Union Mutual Ins. Co.*, 12 Ins. L. J. 482 (U. S. Circuit Court, Michigan, 1883), the application contained the following question: “Has any application ever been made either to this or any other company upon which a policy was not issued?” The answer was “No!” Held, that the fact of an application having been made to another company which had not been acted on, did not render the answer false. Held, also, that the insured was not responsible for the mistake of the sub-agent in filling in a wrong name of the physician after being informed of the facts.

¹ *Ross v. Bradshaw*, 1 W. Bl. 312; *Willis v. Poole*, 2 Park Ins. 650; *Peacock v. Ins. Co.*, 20 N. Y. 293; *Bliss on Life Ins.*, § 102.

² *May on Ins.*, § 295.

³ *Watson v. Mainwaring*, 7 Taunt. 763. See *Peacock v. Ins. Co.*, 20 N. Y. 293; *Rose v. Ins. Co.*, 2 Irish Jurist (O. S.) 206, cited *Bliss on Life Ins.*, § 106.

In *Grattan v. Ins. Co.*, decided by the N. Y. Court of Appeals, reported in 92 N. Y. 274, the question was as to the meaning of the warranty of good health used in an application for insurance. “The defendant,” said Finch, J., giving the opinion of all the judges except Ruger, C. J., who dissented, “resists the verdict rendered in this action upon numerous grounds, the first of which is there was a breach of warranty by the insured as to the health of his brother Terence; that there was no conflict of evidence to carry the question to the

§ 908. "*Dyspepsia*" does not necessarily involve ill health.—The fact that a party suffers from dyspepsia does not of itself render untrue jury; and that the charge of the court upon the subject was erroneous. There was much and very strong evidence that, for a considerable period just before the warranty of the applicant that his brother's health was good, Terence was in fact ill, and was emaciated, weak and had a consumptive cough. His employers so testify, and that, as a consequence, they sent him to their own medical adviser, Dr. Marenness, to be examined, upon whose report he left their employ as unable longer to endure the labor required. On the other hand, witnesses were examined who testified that during the same period he appeared to be in good health, that he looked like a healthy man, and gave no indications to the contrary. The controversy, therefore, revolves about the true meaning of good health as used in the words of warranty; the appellant contending that it means good, in fact, actual freedom from illness or disease, and that, so understood, there was no dispute about the facts since the sickness of Terence was proved, and the plaintiff's evidence never went beyond mere appearances and raised no issue over the real fact. But it must be remembered that the question put and the answer given related not to the applicant's own health but to that of a third person. Unless in rare and exceptional cases the insured answering could only answer from physical appearances and indications. He could not have the knowledge that an individual has of his own condition, though even in such case self-deception is not rare, and very often entirely innocent and honest. Such an inquiry and its answer must necessarily be understood in a general and ordinary, and not in a strict and rigid sense. One who is not a doctor and speaks not of himself but of a third person, necessarily gives rather an opinion founded on observed facts than an absolute and accurate fact when he describes the health of such a person as good. He means, and is understood to mean, that the individual inquired about has indicated in his action and appearance no symptoms or traces of disease, and to the observation of an ordinary friend or relative is in truth well. He means that, because he cannot usually mean anything else; and the insurer naturally and necessarily must so understand question and answer; and, considered as a warranty, the answer warrants what it means and nothing more. The authorities almost, if not quite without exception, justify this view of the scope and meaning of an answer warranting the good health of a third person. *Cushman v. U. S. Life Ins. Co.*, 70 N. Y. 76; *Peacock v. N. Y. Life Ins. Co.*, 20 N. Y. 293. Upon such view of the law the plaintiff's evidence was admitted, and the question of the truth of the warranty submitted to the jury. The criticism upon the charge is that it confused the distinctions between a representation and a warranty, and substituted the honest belief of the applicant in the room of the actual fact. Some portions of the charge spoke of the answer given by the applicant as a representation, and of its falsity, if false, as misrepresentation; but at the close of the charge its language and purport in this respect were challenged, and the court therefore carefully explained its meaning. The learned counsel for the defendant asked the court to charge that applicant "was bound at his peril to know the truth of every statement that he made, and whether intentionally or

a statement on his part that he is in good health. "If dyspepsia," said Chambre, J., in a case in which this question arose,¹ "were a otherwise, if in fact any statement that he made was not true, under the warranty it vitiated the policy." The court so charged, and added by way of explanation, and to make clear the meaning intended to be conveyed, 'that if from all the appearances of the brother he was in good health; in fact in good health, so that everybody would so pronounce him: and there was nothing to indicate to any person that he was not in good health,' then the warranty was not broken, although in fact the germs of a lurking and hidden disease might exist. All difficulty as to the difference between representation and warranty was thus cleared away, and the meaning to be attached to the latter definitely stated, and we think correctly. A question of fact was thereby raised for the jury. While the evidence of Jeffers and of Warren showed the existence of ill health, the symptoms of which were plainly apparent, and their conduct in sending him to Dr. Marenness for examination, and his in submitting to it, and thereupon ceases work, furnishes very strong evidence of ill health, both actual and apparent, yet there is a considerable array of evidence in the contrary direction. Warren admits that he had before sworn he was not aware that Terence was a sick man until he returned with a paper from the doctor. Noelte, with whom Terence boarded, describes him as not sick and showing no such appearance; Fleming and Lewis, with whom he worked, say his health was good to their observation; Eicholz, the agent of the company, took his application for insurance, and the defendant's medical examiner certified the risk in the usual manner. Where the truth is in this contradiction it is difficult to say. Both the actual condition and the observable condition of Terence's health at the date of the warranty were put in doubt by the proofs, for the fair inference from the plaintiff's evidence, taken by itself, was not only that Terence seemed well, appeared well, but actually was in good health. The question of fact was submitted to the jury in terms quite as favorable to the defendant as the law of the case required, and their conclusion is beyond our review.

"Another objection to the recovery is founded on the answer given by the applicant to the medical examiner of the company, which in the written statement denies, on the part of the insured, knowledge of the cause of his sister's death. The question is serious. It is conceded that the sister of the insured, before his own application, died of consumption; that the insured knew the fact; that it was material to the action of the insurance company which was entitled to know the truth; that the fact was concealed and a false answer that the applicant did not know was made, either by the applicant or the medical examiner; that the false answer was in fact written down by the latter; but that the insured told him the precise truth and the actual fact. The controversy is thus narrowed to a single question, who was responsible for the falsehood; was the insured chargeable with it, or was it the sole fault of the company through its medical examiner? On the face of the papers it was the insured.

¹ *Watson v. Mainwaring*, 4 Taunt. 763. See Taylor Med. Jur. 740.

disorder that tended to shorten life within this exception, the lives of half of the members of the profession of the law would be unin-

His application, signed by him, and with knowledge of the contents of which he is *prima facie* chargeable, declares and warrants that his answers to the questions therein contained, 'and to those in the examiner's report herewith, are fair and true.' The examiner's report contains the falsehood; and appended to that is the certificate of the insured, signed by him, in these words, viz.: 'I hereby declare that I have given true answers to all questions put to me by the medical examiner, that they agree exactly with the foregoing, and that I am the same person described in the accompanying application, and whose signature is appended to declaration and warrant herewith.' This certificate in terms confessed that the questions appearing upon the paper to have been answered by the applicant were in truth answered by him; that they were written out upon the paper before its signature by the applicant; that as so written they agree exactly with the answers made; and that the insured knew that fact and had knowledge of how they were written. Stopping at this point the case is clear. It is one in which the truth is told to the medical examiner; where the latter, instead of the truth, writes down a falsehood; where the applicant reads and knows the answer that is written, and with full knowledge of its falsity, as written, certifies that it is true, and agrees exactly with answers in fact made.'

"This is the applicant's written admission. It is conclusive upon him unless by some sufficient proof he explains and rebuts it. If he did read the answer as written, if he knew of its presence and still certified to its truth, the fraud was his. The medical examiner might write down the untruthful answer by mistake or inadvertence, but the applicant could not read it and then certify to its truth without fraud. It is evident, therefore, that no proof can explain and answer the applicant's certificate, which falls short of showing either that the answer was not written when the certificate was signed, or at least was not known to the insured when he made such signature. In a former case against the same defendant the first of these facts was proved. (*Grattan v. Life Ins. Co.*, 80 N. Y. 292; 36 Am. Rep. 617.) In that case the referee expressly found that the whole of the medical examiner's certificate was in blank, and the cause of the sister's death was unwritten when the applicant signed it. In *Mowry v. Rosendale*, 74 N. Y. 361, the same fact appeared. The applicant signed a blank and trusted to the agent of the company to fill it up thereafter. In *Maher v. The Hibernia Ins. Co.*, 67 N. Y. 283, there was proof that the incorrect language of the policy was pointed out by the insured, but he was prevented from having the same corrected, or was thrown off his guard, and dissuaded therefrom by the acts or declarations of the agent of the insurer. The insured must show a state of facts indicating honesty and truthfulness on his part, and leaving the burden of having declared an untruth solely upon the agent of the company. The proof here relied upon for that purpose comes from the letter of the insured written to the company in answer to its assertion of fraud, its tender back of the premium paid, and its demand that the policy be cancelled. The defendant introduced the letter and read so much of it as

surable." Whether the character of the dyspepsia to which the party is subject is such as to in itself materially shorten life, is a question of fact for the jury under all the evidence in the case.

§ 909. "*Serious illness*" is to be determined by the concrete case.—The question whether there is such serious illness as is likely to shorten life depends upon the facts of the particular case. In most cases the inquiry is specifically put, "have you had any serious illness?" Now suppose that the applicant answers in the negative, but it turns out that he has had a serious illness at some prior period of his life, which illness, however, has left no material trace, does this vitiate the policy? The answer to this question depends upon whether the illness in question was of an exceptional character, and was not likely to recur, or whether it displayed or produced some organic weakness or taint which makes life more precarious than it would otherwise be. If the former be the case, it does not vitiate the policy that the applicant should, in his answer, say that he had not had any serious illness. There are few persons who have reached middle life who have not had "serious illnesses" which have been forgotten by them, or which, at the time of their application for insurance, appear to them of no consequence. Some "serious illnesses," e. g., scarlet fever, measles, generally leave the patient with increased probability of longevity, since when they have been safely passed through there is no probability of their recurrence, and thus dangerous ordeals of life are surmounted. There are other "serious illnesses" which are the results of casualty, and neither come from nor produce a defective organism. These also, a party answering admitted that the applicant knew that his sister died of consumption, and the plaintiff read the rest under objection and exception. We think she had the right to do so. The whole of the letter was one connected narrative, and an explanation of a single definite accusation. It was written to contradict the charge of a false representation as to the cause of the sister's death. To read part of it and suppress the rest distorts its purpose and meaning, and turns a justification into a confession. The plaintiff could not have read it at all. When the defendant read a part of it he was bound to take with it all that explained or qualified what preceded. The rule appears to be firmly settled, both as to a conversation or writing, that the introduction of a part renders admissible so much of the remainder as tends to explain or qualify what has been received, and that is to be deemed a qualification which rebuts and destroys the inference to be derived from or the use to be made of the portion put in evidence. *Rouse v. Whited*, 25 N. Y. 170; *Forrest v. Forrest*, 6 Duer 126-7; *Gildersleeve v. Landon*, 73 N. Y. 609."

ing this question, is not expected to recall. On the other hand it is a concealment that vitiates the policy if he omits to state any "serious illness" which either indicates or produces an impaired condition of health.¹ Ordinarily, the question whether there has been an unfair concealment in such cases is for the jury;² though there are some diseases, *e. g.*, tubercles on lungs or brain, which are of a character so chronic, and which so closely affect the question of longevity, that a suppression or misstatement in respect to them is fatal to the policy.³ So far as concerns special injuries, the same general line of distinction is to be observed. Thus to a question whether the applicant had been subject to fits, a negative answer is not to be regarded as untrue from the fact that the party answering had once or twice had a fit not imputable to any organic and permanent cause.⁴ Much latitude, also, is to be allowed in the interpretation of symptoms. Experts are proverbially influenced by their position. It is likely enough that the medical examiner of an insurance company should interpret certain symptoms as indicating gout, when the same symptoms would not be so spoken of by a family physician, desirous of encouraging his patient. Hence the statement by an applicant for insurance, that he never had gout, will not be regarded as shown to be untrue by proof that the applicant exhibited at one time symptoms which an experienced observer might regard as indicating gout in the system.⁵ But if there is proof from which a deliberate perversion of the facts may be inferred, this vitiates the insurance.⁶

¹ See Bliss on Life Insurance, §§ 106 *et seq.*; Cazenove *v.* Ass. Co., 6 C. B., N. 437; Moulor *v.* Ins. Co., 101 U. S. 708; Boos *v.* Ins. Co., 64 N. Y. 236.

² Southern Life Ins. Co. *v.* Wilkinson, 13 Wall. 222.

³ May on Insurance, § 296; Scoles *v.* Ins. Co., 42 Cal. 523.

⁴ Chattock *v.* Shaw, 1 M. & Rob. 498; World Ins. Co. *v.* Schultz, 73 Ill. 586.

⁵ Duckett *v.* Williams, 2 C. & M. 348; Mutual Ins. Co. *v.* Cannon, 48 Ind. 264.

⁶ Foster *v.* Ass. Co., 3 E. & B. 48.

In Southern Life Ins. Co. *v.* Wilkinson, 53 Ga. 535, 5 Big. Ins. Co. 85, one of the questions before the court related to the meaning of the interrogatories. On this question the court said: "One of the questions in the application was, whether the applicant 'ever had any serious illness, local disease, affection, or personal injury.' There was no error in the construction given to this by the court. The charge was that the word 'serious' applied to and qualified each of the terms 'local disease,' 'affection,' and 'personal injury.' Any other construction would have required the applicant to comply with an impossibility, and would

§ 910. *Spitting blood not necessarily a mark of disease.*—Spitting blood, as to which there is usually a question among the interrogatories propounded to applicants for insurance, is not necessarily a symptom of permanent disease. It may come from some merely superficial injury in the mouth or throat, and when so, does not indicate any disease likely to shorten life. It is otherwise when the blood comes from a vital organ. When this is the case, a suppression of the fact, or a negativing it when the question is put, vitiates the insurance. But it does not follow that because the applicant died of consumption, a casual spitting of blood at some time before the application was in any way connected with the ultimate death. It may have been from other conditions than those by which death was caused.¹

§ 911. “*Hereditary disease*” to be strictly construed.—The interrogatories given to applicants sometimes include a question as to whether the applicant was subject to “hereditary” disease. It has been held that this term is to be strictly construed, so as not to include cases of disease which are not distinctively hereditary.²

§ 912. *Material misstatement of age, residence and occupation vitiates.*—Age being an important element in the calculation of all life policies, a material misstatement as to age avoids a policy.³ A man may without fraud or culpable ignorance make a slight mistake as to his age, and when this mistake is not so great as to affect the value of his life, it cannot be set up as a defence by the insurer. It is otherwise, however, when the mistake amounts to several years. An applicant makes an insurance in this respect at his own risk. He is bound, when applying for a life insurance, to know his own age; and no matter how honest he may be in the misstatement, there can

be trifling with his rights and with common sense. To have asked one over forty years of age to state every ‘affection,’ ‘local disease,’ or ‘personal injury’ which he might have had or endured in his lifetime, whether serious, or light and trifling, would be absurd. No one could possibly meet such a question, and it would make the catalogue nonsense as to all practical purposes when it appeared. The object of the question was patent, and a proper one, and the direction given by the court meets it.”

¹ Geach *v.* Ingall, 14 M. & W. 95; Vose *v.* Ins. Co., 6 Cush. 42; Foot *v.* Ins. Co., 4 Daly 288.

² Peasley *v.* Ins. Co., 15 Hun 227.

³ That a misstatement as to the age of the applicant’s parents when they died and the disease they died of, may avoid, see Hartford Ins. Co. *v.* Gray, 91 Ill. 150.

be no recovery if the misstatement be material.¹ And there are some cases in which a misstatement as to place of residence may vitiate the policy. An applicant, for instance, may conceal the fact that he lives in an unhealthy place, and may give another residence; or he may conceal the fact that he is exposed to peculiar perils. In either case, the concealment is to a matter of substance, and makes the policy void. But when the fact misstated is not one which affects the probabilities of life, it is immaterial.² Occupation, also, may become material. If a party conceals the fact that he is in an occupation likely to injuriously affect health, this, if he is asked as to his occupation, avoids the policy.³

§ 913. *Death from negligence or misconduct may be excepted.*—It is competent for the insurer to provide in the policy that there should be no recovery in cases where death was produced by the negligence of the insured. Such an exception is not to be strained so as to exonerate the company from liability in cases where the death was preceded by some act of negligence by the insured by which the death was not immediately caused. Where, however, the act of negligence was the immediate cause of the death, it being in itself culpable, this relieves the company. This was held to be the case with a death caused by the insured jumping out of a car when in full motion.⁴ The same rule applies where there has been a negligent overdose of medicine self administered,⁵ though it is otherwise when the overdose was taken without negligence.⁶ Public policy also precludes a recovery when the death was caused by the insured submitting to an illegal operation.⁷

¹ *Linx v. Ins. Co.*, 8 Mo. Ap. 363. See *Bliss on Insurance*, § 121; *France v. Ins. Co.*, 2 Ins. Law J. 657. That the averment of age may be explained by parol, see *Conn. Ins. Co. v. Schwenk*, 94 U. S. 593.

² *Huguenin v. Rayley*, 6 Taunt. 166. *North Am. Ins. Co. v. Burroughs*, 69 Penn. St. 43.

³ See *Grattan v. Ins. Co.*, 80 N. Y. 281; cited *supra*, § 907. That a restriction in a policy requiring the insured not to remain in a particular climate after a specified time will be enforced, see *Evans v. Ins. Co.*, 64 N. Y. 304.

⁴ *Sawtelle v. Ins. Co.*, 15 Blatch. 216. See *Burkhart v. Ins. Co.*, 39 Leg. Int. 420; 14 Weekly Notes 33, cites more fully *infra*, §§ 918, 919.

⁵ *Ins. Co. v. Lawrence*, 8 Brad. (Ill.) 988.

⁶ *Lawrence v. Ins. Co.*, 5 Brad. (Ill.) 280; *Penfold v. Ins. Co.*, N. Y. Ct. App. 1881.

⁷ *Hatch v. Ins. Co.*, 120 Mass. 350; quoted more fully *infra*, and see *infra*, § 918. In *Travellers' Ins. Co. v. Seaver*, 19 Wall. 531, 4 Big. Ins. Cas. 512, it

§ 914. *And so of suicide.*—It is almost universally the practice to insert in policies of insurance a clause providing for forfeiture in case

appeared that two persons were driving sulkies, in Vermont, in competition alongside of each other at a horse race for money, which sort of race was made illegal by a Vermont statute, and on a collision ensuing, one jumped to the ground from his sulky, and was clear from the sulky, harness, and reins, on his feet and uninjured, and instantly spoke to his horse to stop, and then started forward to get hold of the reins, which were hanging across the axle-tree; and when a hold of, or attempting to get hold of them, was killed by getting tangled in them, falling down and being dragged against a stone. It was held by the Supreme Court of the United States, on a suit upon a policy of insurance on the life of the person killed, which made it a condition of paying the sum assured that the contract should not extend to a case of death caused by "duelling, fighting, or other breach of the law on the part of the assured, or by his wilfully exposing himself to any unnecessary danger or peril," that this death was within the condition; and that the leap from the sulky and securing the reins, and the subsequent fall and injury, were so close and immediate in their relation to the racing, and all so manifestly part of one continuous transaction, that it could not be said that there was a new and controlling influence to which the disaster should be attributed. On a suit for the insurance money on such a policy as the one above mentioned, and where the language of the condition was the matter referred to by the court, it was held to be error to tell the jury that they were to consider "how ordinary people in the part of the country where the insured reside, in view of the state of things then existing, the frequency of such races, and the way in which such matches are usually regulated, would naturally understand such language, whether as precluding such driving or not."

In *Hatch v. Ins. Co.*, 120 Mass. 550, as reported in 5 Big. Ins. Cas. 200, the question was whether death produced by an illegal operation submitted to by the deceased in order to produce a miscarriage was a death in violation of law. The opinion of the Supreme Court on this point was given by Endicott, J., as follows: "It appears by the bill of exceptions that the deceased voluntarily submitted herself to an illegal operation with intent to cause an abortion without any justifiable medical reason; that the operation performed upon her was dangerous to life, and known by her to be so, and that a miscarriage was effected by the operation, from the consequences of which she died. It is therefore established that this voluntary act on her part, condemned alike by the laws of nature and the laws of all civilized States, and known by her to be dangerous to life, did actually result in death, and the question is raised whether for a death so caused any recovery can be had. "We are of opinion that no recovery can be had in this case, because the act on the part of the assured causing death was of such a character that public policy would preclude the defendant from insuring her against its consequences. For we can have no question that a contract to insure a woman against the risk of her dying under or in consequence of an illegal operation for abortion would be contrary to public policy, and could not be enforced in the courts of the commonwealth. See *Amicable*

of "suicide," or of the insured "dying by his own hand." How far a suicide produced by insanity falls within these exceptions is discussed in a preceding volume.¹ It is there shown that the question is one of construction of policy; that in England the words "by his own hands or act," cover all cases of intentional suicide, whether or no the party so dying was conscious at the time of the wrongfulness of the act;² but that by the Supreme Court of the United States it has been held that a party cannot be said to die by his own hand "when his reasoning powers are so far impaired that he is not able to understand the moral character, the general nature, consequences and effect of the act he is about to commit, or when he is impelled thereto by an insane impulse which he has not the power to resist." It was further ruled that there is no "difference, for this purpose, in the meaning of the expression commit suicide or die by his own hand."³ In New York it is held that to take a case, on the ground of insanity,

Ins. Co. v. Bolland, 4 Bligh 194; Horn v. Anglo-Australian Life Ins. Co., 30 L. J. Ch. 511; Moore v. Wolsey, 4 E. & B. 243. It is therefore unnecessary to consider the question raised upon the special clause of this policy and so ably argued at the bar."

In Mair v. Railway Passengers' Ins. Co., 37 L. J. 356, before Mr J. Denman, (See "Daily Telegraph," April 19th 1877, Tidy Leg. Med. 403.), the deceased received a push in a street brawl, and pitched on his head on the granite pavement, receiving injuries that terminated fatally. The company stated he was very intoxicated at the time. Verdict for plaintiff. A rule was obtained for a new trial, in which the following rules were laid down: In a policy of life assurance it is provided that the assurance shall not extend to any death or injury happening while the assured is under the influence of intoxicating liquors or occasioned by his wilfully exposing himself to any unnecessary danger or peril. Although in this case there was a conflict of evidence as to the fact of the assured being affected by the liquor he had taken; nevertheless it was proved that he had accosted a woman in the street, and persisted in doing so in the face of remonstrances, and was finally knocked down by the man in whose company she was at the time, receiving injuries from which he died. It was held that to enable the company to take advantage of the above proviso, it was not necessary that the assured should be under the influence of intoxicating liquor at the time of his death, as well as at the time when the injury was sustained, but that it was sufficient to show that he was under such influence when he met with the injury from which death afterwards resulted. "Under the influence of intoxicating liquors," means under such influence as to disturb the quiet exercise of a man's intellectual faculties. Tidy Leg. Med. 403.

¹ Wh. & St. Med. Jur., §§ 229 *et seq.*

² Ibid. § 230.

³ Life Ins. Co. v. Terry, 15 Wal. 580; aff. Ins. Co. v. Rodel, 95 U. S. 232.

out of the proviso, the insured must have been so mentally disordered as not to understand that the act he committed would cause his death, or he must have committed it under the influence of some insane impulse which he could not resist; it not being sufficient that his mind was so impaired that he was not conscious of the moral obliquity of the act.¹ In most states in this country the position taken in New York is followed;² though in Pennsylvania, Georgia and Louisiana the view taken by the Supreme Court of the United States is followed.³ It should be added that in many policies it is now provided that the policy should be void "if the insured shall die of suicide, sane or insane." Under a provision to this effect it has been held that in cases of intended suicide the company is not liable no matter how insane the insured may have been.⁴ But this does not apply to cases of unintended self-destruction.⁵ Hence, a death produced by an overdose not negligently taken, does not avoid a policy.⁶ In a case decided in Alabama in 1883,⁷ it was held that a clause in a policy which provided that the insurance should be forfeited if the insured took his own life, sane or insane, was valid.

Whether a particular death was produced by what are called natural causes, or was the result of suicide, is to be determined by

¹ *Breasted v. Loan Co.*, 8 N. Y. 299; *Weed v. Ins. Co.*, 70 Id. 561; *Newton v. Ins. Co.*, 76 Id. 426.

² *Cooper v. Ins. Co.*, 102 Mass. 227; *Estabrook v. Ins. Co.*, 54 Me. 224; *Ins. Co. v. Peters*, 42 Md. 414; *Scheffer v. Ins. Co.*, 25 Minn. 534.

³ *Ins. Co. v. Groom*, 86 Penn. St. 92; *Life Ass. v. Waller*, 57 Ga. 533; *Merritt v. Ins. Co.*, 55 Id. 103. See *Ins. Co. v. Moore*, 34 Mich. 41; *Ins. Co. v. Graves*, 6 Bush 268. In *Clift v. Schwabe*, 3 Man. & Gr. 437, it was held where the phrase was "die by suicide," "that every act of destruction is, in common language, suicide, provided it be the intentional act of a party knowing the probable consequence of what he is about." In *Manhattan Life Ins. Co. v. Broughton*, 109 U. S. 121, it was ruled that a self-killing by an insane person, who is aware of the physical effect of his act but not of its moral aspect, is not a death by suicide, within the scope of a policy of insurance which provides that the policy shall be void in case the party insured shall die by suicide. In the opinion of the court by Gray, J., the prior rulings of the same court in *Life Ins. Co. v. Terry*, 15 Wall. 580, and *Ins. Co. v. Rodel*, 95 U. S. 232, are affirmed.

⁴ *Biglow v. Ins. Co.*, 93 U. S. 284; *Mallory v. Ins. Co.*, 54 N. Y. 651; *De Gogorza v. Ins. Co.*, 65 Id. 232; *Adkins v. Ins. Co.*, 70 Ill. 27.

⁵ *Pierce v. Ins. Co.*, 34 Wis. 389.

⁶ *Penfold v. Ins. Co.*, N. Y. Ct. App. 1881; *Lawrence v. Ins. Co.*, 5 Brad. (Ill.) 280. As to accidental death, see preceding section.

⁷ *Knights of the Golden Rule v. Ainsworth*, 17 Rep. 139.

tests which have been considered in detail in prior chapters of the present volume. The burden in all such cases is on the insurer to show that the death was not natural, but was imputable to suicide. This question is one of fact, to be decided by the jury on the concrete case, under the direction of the court. If the case is in equilibrium, the presumption is against suicide.¹

¹ A remarkable case of this character was tried in Norwich, New York, in December, 1883. The following statement of the facts brought out in the trial is given in the Philadelphia Medical News of December 22d 1883 :—

"The late Col. Dwight, of Binghamton, New York, a few months before his death, secured policies on his life, in various companies, aggregating upwards of three hundred thousand dollars. Having recently been discharged from his debts under the existing Bankrupt Act, Dwight was unprovided with the means to pay the premiums on his policies, and hence made an arrangement for quarterly instalments. He had paid one quarter only when he died. His death was peculiarly timely. The proceedings in bankruptcy had just been concluded, and in a few days the second quarterly instalment of the annual premium would come due. Various circumstances connected with Dwight's illness and death were peculiar, the will, which disposed of the insurance money, is a remarkable document, and the numerous beneficiaries under the will appear to have been selected for the testator's bounty with other than merely friendly interest: hence it can hardly be surprising that the insurance companies suspected fraud, and resisted payment of the insurance money. The executors of Dwight brought suit to compel payment, and hence the legal contest which has just terminated by the defeat of the insurance companies.

"There are several medical and medico-legal questions connected with the case which cannot fail to interest our readers. Dwight was, in some respects, a remarkable man; his malady was obscure; the cause of death was involved in much doubt, notwithstanding an autopsy was held. The trial developed many singular opinions on the part of witnesses to fact, and also on the part of the experts. To present an intelligible view of the case, it is necessary to clear the ground by some preliminary statements.

"Dwight was forty-one years of age, six feet two inches in height, and weighed, when in health, two hundred and twenty pounds; he had, moreover, immense strength, activity and endurance, and he possessed many of the moral qualities of 'Col. Sellers.' After very harassing pecuniary troubles, ended in bankrupt court, he was greatly fatigued and much exposed on a hunting expedition which immediately followed. He fell sick, and the symptoms, as given by Dr. Burr, his physician, were 'sleeplessness, entire want of appetite, loathing of food, vomiting frequently of contents of stomach—mostly drinks that he had taken.' He then improved, and on November 1st was reported as 'dressed and sitting up.' The next day, on rising to open the door of his room, he 'suddenly became faint, and fell back on his bed unconscious. The symptoms were those of a congestive chill. Stimulants and other restoratives were employed, and in the course of an hour he was able to speak.' As there is no

§ 915. *Intemperance material, and so of opium eating.*—There can be no question that habits of marked intemperance are likely to evidence of fever present at any time, this theory of a pernicious intermittent seems strangely at variance with this fact, and no less irreconcilable with subsequent developments."

"On the 9th of November, or one week after this, Dr. Burr reported the onset of the 'expected chill,' but he says, 'we prepared for it yesterday, and late in the evening administered Magendie's solution of morphia, both internally and hypodermically.' 'The doses of morphia were renewed at two o'clock A. M.,' as some pain had occurred. The second paroxysm of the supposed pernicious intermittent was not attended with more characteristic symptoms than had been witnessed in the first. Some depression of the powers of life came on after the 'preparations' to prevent it had been made, but the symptom of chief importance, for the relief of which morphine in repeated doses had been given, was severe pain in the hypochondriac regions.

"After this Dwight again improved, and on the 16th of November, the day of his death, he was 'very comfortable,' according to Dr. Burr, and expressed himself in the evening of the same day as feeling 'unusually comfortable.' During this day large doses of Magendie's solution of morphine were administered—one of these doses being one drachm of the solution, or two grains—and at 9 P. M., an amount, which was not definitely remembered, was given subcutaneously. Not less than three grains, certainly had been taken during the day and evening, some portion of it hypodermatically. It is stated that morphine had been given freely during his illness to procure sleep—the more freely, since Dwight, whilst not an opium *habitué*, was extremely insusceptible to its action. On those days when the 'congestive chills' were expected, and to procure sleep on the night previous to the first fainting fit, he received large doses of morphine.

"Notwithstanding the statement which we find in the report of Dr. Delafield, made to the insurance company, 'that no poisonous symptoms were produced' by the large doses of morphine, it is certain that the pulmonary and circulatory systems were characteristically affected. All the world knows that morphine in full doses, especially when given subcutaneously, is a vascular sedative. It is this power which renders it so valuable an agent in acute serous inflammations. The sedative action is made up of two effects; lessened activity of the cardiac-motor ganglia; contraction of the peripheral arterioles. Fluid extract of gelsemium had also been given during the last two weeks of Dwight's life—a practice which necessarily increased the cardiac depression. There were conditions developed at the autopsy which rendered this treatment peculiarly hazardous.

"Dr. Delafield, who made the first post-mortem examination, found changes in the intestinal glandular apparatus, and in the spleen, indicative of the prodromal stage of typhoid, and the heart was small and its muscular tissue "somewhat degenerated." The post-mortem also disclosed chronic pachymeningitis, and a small hemorrhagic extravasation in connection therewith. The opinion of Dr. Delafield as to the mode of dying seems to us wholly sound. The attacks

shorten life; and hence a misstatement by the party made as to such habits, may vitiate a policy. But it must be remembered that there

supposed to be congestive chills, he says, 'were due to sudden feebleness of the heart; in the second attack the heart ceased to act.' In this result the agency of the morphine is obvious. Although Dwight's brain was rather insusceptible to the narcotic impression, the heart was in a condition to be depressed by the enormous doses required to force sleep. In the words of Dr. Burr, 'he suddenly without any premonition sank away and died.'

"The question of suicide entered largely into the theory of the mode of dying adopted by the experts and the counsel for the insurance companies. Before we consider the means by which Dwight was supposed to effect his purpose, we must dispose of the influence which certain moral questions and personal characteristics had in determining his actions. The reason he had for taking so great an amount of insurance, may have been, to secure large sums of money to his family and friends, by a supreme fraud. When we reflect on the enormity of the crime, on his hopeful disposition and self-confidence, especially on the large enterprises which he had in view, it seems more rational to interpret his conduct by the light of other motives. From this point of view the large insurance was intended to bridge over the period between the present impecuniosity, and that successful enterprise with 'millions in it,' which, as the testimony shows, he had entered upon. The disclosures of the post-mortem render it probable that he was in the incipiency of one of those forms of mental derangement characterized by expansive ideas. Pachymeningitis accompanied by a hemorrhagic extravasation is so common a condition in some forms of insanity that we can hardly doubt its agency in this case. A large life insurance was a natural conception of a mind now about to enter on gigantic schemes of money-getting.

"The most important, and, indeed, only real evidence of suicide was afforded by a peculiar indentation and a corresponding line of discoloration around the neck, extending from both sides upwards and backwards, as if made by a cord. There was no proof of hanging. On the contrary, the testimony of several witnesses to the final cessation of Dwight's breathing is conclusive against the theory of suicide by strangulation. What, then, produced this appearance of the neck? The explanation offered by the undertaker is, probably, the correct one. After death, the flexing of the neck caused by the support under the head, and suggillation, the tissues being fixed in this position by a packing of ice, produced the appearance of which so much use was made by the experts of the insurance companies. Dr. Swinburne, of Albany, was the original author of this strangulation theory, supported it by his testimony at the coroner's inquest, and, undoubtedly, impressed his views successfully on the insurance companies' experts. There was no injury to the hyoid bone, to the larynx and trachea, but some evidence of death by asphyxia were certainly present. Strangely enough, no attention was paid to this condition as a result of morphine narcosis. We have already alluded to the effect of this narcotic, when the condition of the heart was under consideration; but the post-mortem appearances indicate that respiratory failure probably preceded by a few seconds the arrest of the heart,

is a wide difference of opinion as to what intemperance really is. The moderate use of wine is regarded by one class of persons as

for this organ was nearly emptied of blood, and the lungs were congested and inflated.

"It is the misfortune of our present system of jurisprudence, as regards expert testimony, that the medical men summoned on one side assume the position of partisans, and testify only to facts that are regarded as favorable to the side on which they are retained. The theory of strangulation suited the interests of the companies seeking to establish fraud, and it would have been fatal to their cause to admit the agency of the repeated doses of morphine in inducing death. That respiration was deeply embarrassed is shown by the testimony of the person who sat up with Dwight on the night of his death. Ten minutes before breathing finally ceased, this person sitting in the room adjoining, heard Dwight 'gasping for breath.'

"Reviewing now the case in its entirety, we believe that the decision at which the jury arrived is supported by the medical evidence, and that the accusation of fraud is unjustified. If the lesions demonstrated by Dr. Delafield at the first autopsy seem inadequate to explain the fatal termination, the enormous doses of morphine administered on the last day of Dwight's life, by way of 'preparation' for the expected 'congestive chill,' are quite sufficient. He had suffered from a pachymeningitis, and there had occurred a recent extravasation at the site of the old exudation; the intestinal glands manifested the appearances of the prodromal stage of typhoid; the spleen was enlarged and softened, and the forces of the body were reduced by several weeks of illness; under such circumstances, is it surprising that, having received three grains of morphine within a few hours, death should have occurred with all the phenomena of respiratory paralysis? The insurance companies should profit by such an experience, and eminent experts should view all sides of similar cases, and become judicially minded if they would retain any of the influence belonging to the scientific character in presence of court and juries."

In the Medical News for January 12, 1884, there is a communication from Dr. H. G. Wood (one of the expert witnesses examined for the defence), from which the following extracts are taken: "About the first of June, 1883, I received a telegram from Prof. Austin Flint, Jr., requesting that Drs. Roberts Bartholow, Theodore G. Wormley, Isaac Ott, and I, should meet him the next day at my office. At the interview we were informed by Prof. Flint that he desired to see us concerning the Dwight case, as the lawyers and the Insurance Committee, believing that Col. Dwight had died of gelsemium poisoning, had requested him to procure a professional opinion from us upon evidence furnished in a privately printed book, copies of which he put in our hands. We were expressly told that these books were to be considered as confidential communications; that the matter contained in them was not legal evidence which had been sifted and could be relied on, but that it was a collected mass sufficient to indicate the probable drift of the evidence at the trial.

"Dr. Flint remained only a few minutes, and did not in any way attempt to

temperate, by another as intemperate. But, however this may be, a statement by an applicant for insurance that his habits were temper-influence our decision. We separated, met by appointment twelve hours later, and found that we had separately reached the same conclusion, viz., that the death of Col. Dwight was probably caused by strangulation. Prof. Bartholow was most positive and outspoken in this opinion; Dr. Ott the least certain and positive; Dr. Wormley, whilst acquiescing in the opinion as a matter of belief, said that it was too much out of his line for him to give evidence. This conjoint opinion was given to the insurance companies with the reserved statement that we had no evidence that the heart had been properly examined, and that, therefore, there was that element of doubt. It was subsequently proved at the trial that microscopical examination of the heart had been made, although the report had not been furnished us.

"In regard to the relations of the other experts, Prof. C. H. Porter, of the Albany Medical College, was originally employed by the insurance companies to visit Mr. Dwight in his lifetime. At the time of the first autopsy he was hastily summoned by telegraph to attend, and being unable to go, on the instant, selected Dr. John Swinburne as the best substitute he could procure. Dr. Swinburne's connection with the case was, therefore, accidental. He was not asked to go by the insurance companies, or their legal representatives, but by Dr. Porter, as a personal favor to himself. The testimony of Dr. Swinburne in the trial was not only in matters of opinion, but also in matters of fact. If the facts sworn to by Dr. Swinburne are as he alleges, I can but reiterate my opinion expressed upon the stand, that there is no room for doubt as to the cause of death.

"To return from this digression to the story of the last months of Col. Dwight's life. By the 22d of September 1878, he had been either accepted or rejected by every life insurance company in the country, excepting one in California, and had secured in all, policies of insurance representing two hundred and fifty-six thousand dollars, and requiring for their maintenance an aggregate annual payment of over eight thousand dollars. He was at this time in bankruptcy, living at his father-in-law's house, without profession or business, or any apparent source of income. There was no evidence to show that Col. Dwight had at this time any scheme or plan for large enterprise upon hand, unless it was, as claimed by the defence, that of defrauding the insurance companies.

"In order to obtain some information concerning the day of his death, Mrs. Owens, the sister of Mrs. Dwight, was placed upon the stand. According to her statement, the apartments occupied by Col. Dwight were in a semi-detached cottage, which formed a part of the Spaulding House, in Binghamton. They consisted of a sitting-room, entered directly from a corridor, and communicating with a bed-room which was furnished, with one window opening upon the ground. In the sitting-room was an open fire or stove. The bed in the chamber had a high head-board of such a character that it would be easily possible for a man to hang himself whilst in bed.

"During the day of November 15th, Col. Dwight was up, dressed, saw

ste, would not, as a matter of law, be held to be negatived by proof that he was in the habit of taking spirituous liquors to an extent not

various persons in his sitting-room, executed legal papers in clear, bold hand was bathed, and had his beard cut by the barber. Between 8 and 9 o'clock p. m., Mr. Charles A. Hull came. About half-past nine Dr. Dan S. Burr came in, chatted a few moments and then left. Mrs. Dwight and Mrs. Owens left the room in a few minutes after the Doctor, Col. Dwight bidding them good-night. They retired to their room on the other side of the corridor, where they slept together. At about half-past eleven, they were aroused by a rap upon the door. Mrs. Dwight instantly arose and went to her husband's room, Mrs. Owens following in two or three minutes. Mrs. Owens found in the room Mr. Hull, W. F. Spaulding (the proprietor of the hotel), and Mrs. Dwight. Mr. Dwight gave no sign of life after she entered. He was supported on pillows, and Mr. Spaulding was trying to give him brandy, but desisted in a few minutes, saying that he did not swallow it. At the suggestion of some one, hot water was obtained, and Col. Dwight's hands put into it. Something over half an hour after Mrs. Owens went to the room the undertaker arrived. Mrs. Dwight and Mrs. Owens then went into another room and went to bed.

"In order to complete the story at this point, it is necessary to draw on the evidence furnished by Neri Pine, the attorney of Col. Dwight, who was put upon the stand by the plaintiff. He stated that on November 15th he called on Col. Dwight to transact certain legal business, and to inquire concerning the funds for the payment of the second quarter's premium which would be due on the 19th. Col. Dwight replied that he had no money to pay it, but that he (Mr. Pine) had better see Mr. Dusenberry, his father-in-law, whom he (Col. Dwight) thought would advance the necessary funds. Mr. Neri Pine further stated that Col. Dwight gave him no reason for supposing that any arrangement had been perfected with Mr. Dusenberry, but told him 'that he was going to make arrangements with his father-in-law.'

"He then bequeaths large sums of money to the judge of the Supreme Court of his district, and to several of the most prominent lawyers of Binghamton, including the District Attorney. He leaves the sums of \$10,000, \$5000 and \$1000, respectively, for the purpose of giving annual banquets to the poor of the town, fire department and the press of the town; and to the Binghamton Library Association he bequeaths \$7500. He makes a bequest to each of the four churches in Windsor, a village near Binghamton.

"After a number of small private legacies, the bulk of the money to be derived from the insurance companies is directed to pass to his wife and son; but if the wife shall not have been released from bankruptcy, her share is to go to the son, in order to prevent its being used for the payment of debts. * * *

"Fifty-eight hours after death the first autopsy was made on the alleged body of Col. Dwight. The results obtained were testified to on the part of the defence by Dr. John Swinburne, and are embodied in the first hypothetical question herein presented. A second autopsy was made about five months after death in the presence of various physicians. The results obtained were

calculated to produce habitual intoxication. If the quantity usually taken was likely to be injurious to health, this by itself, would pre-

testified to by Drs. Swinburne, Sherman and Bridges, and are also embodied, so far as they are of any importance, in the hypothetical question.

"Before taking up these questions it seems proper to give a little more in detail the evidence submitted by the defence in regard to two or three points.

"As to the *condition of the heart*. Dr. Swinburne testified that the heart was perfectly healthy in every particular, except that some little thickening was noticed around the edges of the valves, and that at the second autopsy he carefully examined the coronary artery and found it entirely normal.

"Dr. Sherman testified that, at the second autopsy, he found the heart remarkably firm, and in a good state of preservation; that he had prepared about one hundred and fifty slides of its walls for microscopical examination, and found in each the muscular fibre perfectly normal. He had with him in court a number of these specimens, and offered them for examination by any experts who might be called by the plaintiff, but no such examination was made.

"Dr. Austin Flint, Jr., stated that he had examined a number of these slides, and found the heart-tissues normal. Dr. H. C. Wood confirmed this condition of the muscle-fibre in the slides which he had examined. Dr. E. H. Bridges testified that he had examined the heart both macroscopically and microscopically, and found it normal.

"When it is borne in mind that Mr. Dwight was an athletic man, in the prime of life, forty-one years of age; had spent the last months of his life hunting in a hilly country without suffering from shortness of breath or other distress; that the lesions in the body were entirely diverse from those found after death from heart failure; that the heart had emptied itself of blood, and ceased its action in systole; that there was no evidence whatsoever at the trial in any way contradicting the statements made by Drs. Swinburne, Sherman and Bridges; that the heart, carefully examined macroscopically, appeared to be perfectly normal; and the assertions of Drs. Sherman, Bridges, A. Flint, Jr., and H. C. Wood, that the fibres were shown by microscopical examination to have their striæ well marked, and to be entirely free from degeneration—it seems to me that the question as to the condition of the heart must be considered as settled. Certainly no opinion that death resulted from heart-failure could be given upon the evidence furnished at the trial.

"In regard to the existence of *superficial emphysema of the lungs* as present at the first autopsy, Dr. Swinburne testified minutely and positively, although from some oversight this testimony was not embodied in the hypothetical question as to the cause of death as given a little later. Such recent, fresh rupture of the upper air-vesicles is, in itself, almost sufficient to prove that a man has died from an obstruction to respiration in the throat. To rupture the air-vesicles there must be great internal pressure, as of forced respiration, and prevention of the escape of the air, which then tears open those vesicles whose walls are not closely supported by other vesicles, or by tightly contracting muscles.

"In regard to the alleged *furrow in the neck*, Dr. Swinburne testified that it

vent recovery, if it were shown that the applicant concealed the character of his habits when specifically asked if his habits were

'was a heavy indentation in the neck, commencing on the right side near the hyoid bone, and extending upwards and backwards to within, perhaps an inch or so and perhaps less, of the centre of the posterior part of the neck ; on the left side, the same indentation commenced about the upper part of the cricoid cartilage, extended about the same angle upwards and backwards until the indentations came within an inch and a half of meeting. These indentations were full three-eighths of an inch deep, so you could lay your finger right in them, and about that in width—I should say full that. At the bottom of the indentation, there was a peculiar appearance, sort of leathery appearance, or had a half-burnt or scorched appearance.'

"Dr. Swinburne further stated that at the second autopsy this indentation was 'plainly perceptible,' and the same peculiar condition which appeared before at the bottom of the indentation was present—that sort of leathery or hardened feeling.'

"Dr. Sherman testified that, at the second autopsy, he called attention to the deep furrow in the neck, and put his finger in it. He stated that 'the texture of the skin within this furrow had a leathery feeling. It had what Casper calls mummified.' That he had seen other cases where death had been caused by strangulation with a cord, and that the furrow had the same characters as in the other cases.

"Dr. Bridges testified that 'the furrow was rounded at the bottom, about one-eighth to about a quarter of an inch thick, I should judge, and a quarter to half an inch broad. The lower or bottom part of the furrow or groove was rounded, so that it fitted the convex surface of my little finger, that I passed through on each side. The base of the groove was hard, and had this appearance that has been described—a parchment look.'

"Mr. Nat. B. Freeman testified that he had, during the war, been accustomed to handling corpses, and familiarizing himself with their external appearances ; that at the second autopsy he examined the furrow, found that it 'was deep enough for my finger to go partially into it ;' that the skin at the bottom of the furrow appeared hard ; 'the feeling was a hard feeling ; its appearance was similar in appearance to old leather.'

"In regard to the *cause of death*, Dr. Swinburne gave as his firmly-settled opinion, based upon personal knowledge of the external and internal appearance of the body, that the death had been caused by strangulation with a rope or cord.

"The position of the other experts was judicial, so far as concerned the cause of death ; they gave their opinions upon hypothetical questions which embodied the evidence as to facts which had been given and bore upon the subject.

"There were several hypothetical questions given, but for want of space only the one which bore directly upon the main issue as to the cause of death is here inserted.

"You examine about fifty-eight hours after death, in the middle of Novem-

temperate. But in addition to this, there is authority to the effect that if a person of intemperate habits should reply to a question as

ber, the body of a man found dead at about 11 p.m., having been last seen alive one hour and a half before, and then apparently not in a condition of apprehension of sudden death; you find it to be the body of an unusually large and powerful man, great muscular vigor, with a considerable development of firm fat, forty-one years of age; you find nothing unusual in the appearance of the face and the general surface of the skin, except the presence of small dark spots indicating a little effusion of blood in the skin of the back and the back of the right arm; a furrow about the sides of the neck nearly meeting in front and behind, about the size of the little finger, rounded at the bottom, and the skin involved in the furrow dense and hard, and a surface like parchment; the furrow beginning in front just above the larynx and extending upwards and backwards at an angle of nearly forty-five degrees; the brain and membranes perfectly natural and healthy, except a clot of blood on the surface on one side near the top of the head, the clot being evidently of very recent origin, but not sufficient in itself to produce death; the lungs deeply congested with dark liquid blood, but presenting no evidence of inflammation, a few small fibrous nodules, and the bronchial tubes and windpipe deeply congested and filled with bloody mucus; the heart and the bloodvessels, including the valves of the heart and the vessels supplying the blood to the substance of the heart, absolutely healthy and natural in size and in every other regard, excepting a slight-unimportant thickening of some of the valves; the cavities of the heart containing a very small quantity of dark blood; the liver, the spleen, and kidneys absolutely natural and healthy, except that they, especially the kidneys, are deeply congested with blood and of natural size and weight; a small quantity of undigested food in his stomach, the mucous membrane of the stomach and intestines congested, and a small area of apparent inflammation about the size of a dollar in the stomach; finding all of the organs in the condition stated, and the furrow made as described above, what, in your opinion, was the immediate cause of death?"

"To this, Dr. Wood answered, the death could only have been produced by strangulation with a cord. After the cross-examination of Dr. Wood, experts were called, one after the other, until the court refused to hear any more. In this way, Drs. Porter, Sherman, Bridges, Avery, Lee, and Hand (the latter three gentlemen being practising physicians and coroners or ex-coroners of Chenango county, New York) were allowed to answer the hypothetical question, and all agreed with the answer given by Dr. Wood.

"The only evidence offered by the plaintiff bearing upon the medico-legal facts in the case was:

"First. *In regard to the two alleged chills* occurring during his illness—the last one a week previous to his death.

"The only evidence given concerning these attacks was that of Mrs. Bessie McDonald and Mr. Francis Downe. It was so indefinite, and would require so much space for its recital here, that the reader is referred to the book of cor-

to his habits, that his habits were temperate, this, by itself, is a falsification that would avoid the policy. Insurers, so it is held, have

rected evidence. From it it is impossible to state with any degree of positiveness what the nature of the attacks was. It is not probable that they were malarial, for in the first attack there was no fever, and in the second attack the fever lasted for 'perhaps half an hour,' and the chief symptom was abdominal pain.' * * *

"Second. *In regard to the occurrences of the night of Col. Dwight's death.*

"The only important testimony was that of Mr. Charles A. Hull. According to Mrs. Owens, Mr. W. F. Spaulding and Mrs. Dwight were already in the room of Col. Dwight when she (Mrs. Owens) entered directly after his death. It is altogether probable that Mr. W. F. Spaulding has intimate acquaintance with the circumstances surrounding the death of Col. Dwight. The defence could not call him since, according to their theory of the case, he had guilty knowledge, and if he should testify falsely, they, not being able to cross-examine or contradict their own witness, would be held by his declarations. The failure of the plaintiffs to put either Mr. Spaulding or Mrs. Dwight on the stand, naturally excited comment.

"Mr. Charles A. Hull testified that he had never sat up with Col. Dwight until the night of his death ; that he had been his assignee in bankruptcy, but not intimately acquainted with him ; that he had no knowledge or experience in nursing ; that no medicines were left with him and no instructions given him by the physicians on Friday evening ; and that Mr. Dwight sent for him the Wednesday preceding the Friday of his (Dwight's) death, and had requested him at that interview to sit up with him on Friday night, because 'in an emergency he thought I was cool and would not get excited.' He also admitted, on cross-examination, that he had stated before the coroner's jury that Dwight said 'he wanted him because he would be cool in case anything should happen.'

"Mr. Hull testified that shortly after 10 o'clock :

"I stationed myself in a chair near the door leading into his bed-room, and this door was partially open, and I sat there. During the time I sat there, at one time the colonel called me, and said his head was feverish, and wished me to saturate a cloth in bay rum and put it on his head, and I did so. At another time he called for some water, and I gave him a swallow of water. After that he seemed to sleep, and before, at different times, I thought he was sleeping, but of course it was uncertain, and I did not disturb him. Along about between 11 o'clock and half-past 11, I heard him gasp for breath, as it seemed to me, and he says, 'Charley,' and called to me, and I went in to his side as quick as I could, and put my hand under his head, and raised his head up and gave him some brandy ; and then I ran across the hall as rapidly as I could to Mrs. Dwight's door and rapped on it very loud, and went back to the bedside again, and I think I administered brandy a second time then, and I felt of his pulse ; and in a short time Mrs. Dwight came out only partially dressed, and I asked her to touch the bell for Mr. Spaulding, and she did so. In a very short time Mr.

a right, from motives of their own, to act upon what rules they please, and to stipulate, as in this case, that even though a man's

Spaulding came up there, and was followed by Mrs. Owens, Mr. Spaulding's brother, and his family, consisting of his wife and daughter.'

"That about fifteen minutes before he heard the gasping, Col. Dwight took a cracker from a stand near the bed and ate it. Also that he (Hull) sat in a chair, so placed in the sitting-room that he could see all of Col. Dwight's movements through the open door. He further stated that Mr. Spaulding pinched Dwight's tongue, leading to the suspicion that it was protruding.

"The only other evidence at all bearing upon the events now under discussion was that given by James E. Lee, the servant who brought the hot water in which, Mrs. Owens and Mr. Hull testified, the hands of Col. Dwight were soaked after she entered the room. Mr. Lee believed that he saw Col. Dwight breathing at the rate of about four or five times a minute. Before this, however, according to the statements of both Hull and Mrs. Owens, Col. Dwight was dead.

"Third. As already stated the *expert testimony on the part of the plaintiffs* was limited to a description of the lesions found in the body after death. In regard to these lesions the cross-examinations of Drs. Hyde, Burr, Chittenden and Orton, elicited the fact that there was very little non-agreement between them and Dr. Swinburne, except in regard to the appearances upon the neck.

"It was claimed by several, if not all, of these gentlemen, that the so-called indentation upon the neck was simply a crease or fold in the skin; but on cross-examination they all admitted that they had signed at the time of the autopsy, when the body was before them, without comment or protest, an official description of this crease as a 'heavy indentation, extending upwards and backwards from os hyoides to right around back of neck, and on left side, below the thyroid cartilage, running upwards and backwards at an angle of about forty-five degrees.' * * *

"Testimony was given by Mr. Van Vradenburg, Mr. Ayres, the undertaker, and James E. Lee, in regard to the existence of a furrow around the neck shortly after death. Mr. Van Vradenburg testified that his 'examination of his neck' 'was close and marked,' and that he was led to make this examination 'on account of something that was then stirring in my [his] own mind.' The nature of this 'something' was not in evidence, but Mr. Van Vradenburg further stated that 'it did not lead him to investigate any other part of his [Dwight's] person,' nor did he examine the feet or hands.

"Mr. Ayres testified that he was the undertaker who prepared Col. Dwight's body, washing and dressing him; that directly after his death there was 'no crease or mark as of a rope or otherwise upon his neck.' He further testified that the body was placed in an ice-box in such a way that the head was forcibly bent forward on the body, the chin resting upon the chest, and the occiput being raised, so as to bend the neck at an angle of about forty-five degrees. He gave it as his opinion that the crease, or furrow, or indentation subsequently found in the neck of Col. Dwight was produced by the elevation of the head in

health be not impaired, every person whose life is insured at their office shall be a person of temperate habits."¹ The habitual use of the ice-box, and its subsequent restoration to the normal position. Mr. James E. Lee stated that he assisted the undertaker, and the crease was not there then.

"After the plaintiffs had closed the case, the defence recalled their experts, and put to them the following hypothetical questions. There was no dispute whatever as to the agreement of the conditions of these questions with the facts of the case as testified to by the medical witnesses for the plaintiffs; in the second question, the testimony of Messrs. Van Vradenburg, Ayres and Lee in regard to the non-existence of the furrow directly after death was omitted; the medical part of the question is taken almost verbatim from the notes of the autopsy, the disputed part of these notes being omitted.

"Question 1.² 'Assuming that a man of 41 years of age, who had previously enjoyed robust health, had been complaining for about three weeks, and was found on a Saturday morning in bed, shivering, teeth chattering, surface clammy and cold, with the blood settled under his nails, and so continued from one to two hours, breaking out into a cold sweat, with a feeble, whispering voice, and that this attack passed off without fever; that the second Friday after this occurrence, having during the day been up attending to business with his lawyer, and having his beard dressed by a barber, he was left about 10 p. m. by his doctor in such a condition as to create no alarm; that at or about 11 p. m. he spoke pleasantly to his attendant, calling his attention to his manner of eating a cracker, helping himself to one from a dish near his bed, and chewing it without difficulty; that within fifteen minutes the attention of the attendant was called to such man by a gasping noise, and that this man was dead in a few minutes thereafter; that at an autopsy held within fifty-eight hours after death the liver and spleen were found to be normal, except congested, the heart nearly empty, and that there was no pigmentation anywhere; could or could not such a man have died of congestive chill, or any other form of malarial fever?'

"The uniform answer to this question by the experts was that, in their opinion, he could not have so died.'

"Question 2. 'Suppose that a man, after an obscure alleged illness of about five weeks' duration, is on a given day able to be up and transact business with his lawyer and have his beard trimmed; is left by his doctor at 10 p. m. on the same day, in such a condition as not to give any cause for alarm; and that at 11 p. m. is talking pleasantly to his attendant and eating a cracker, and in less than half an hour after is dead; and that at the autopsy, made fifty-eight hours

¹ Coleridge, J., in *Southcome v. Merriman*, 1 C. & M. 286; *Aveson v. Kinnaid*, 6 East 188; *Wheaton v. Hardisty*, 8 E. & B. 232; *Mowry v. Ins. Co.*, 9 R. I. 346; *Union Ins. Co. v. Reif*, 36 Ohio St. 596; see *Rawlins v. Desborough*, 2 M. & R. 328.

² The first part of this question was based upon the testimony of Mrs. MacDonald.

opium eating, also, if concealed, there being inquiries made to which a candid reply would bring out the fact, will bar a recovery on a policy when the opium was taken to an extent likely to injure the health.¹

after death, the following conditions are revealed : a heavy indentation, extending upwards and backwards from os hyoides to right around back of neck and on left side below the thyroid cartilage running upwards and backwards at an angle of about forty-five degrees. Post-mortem discoloration of posterior portion of body, several small ecchymoses of skin of back and shoulders; anterior part of right arm small ecchymosis. Thorax, lungs and heart in natural position, except that the lungs are unduly inflated. About four ounces of serum in bottom of left pleural cavity ; the same amount in right pleural cavity. Left lung one pound and three-quarters ; bronchi congested and coated with mucus. Upper lobe congested and oedematous ; lower lobe still more congested and oedematous. Right lung two pounds ; bronchi congested and coated with mucus. Upper lobe, at the apex several small fibrous nodules ; rest of upper lobe congested and oedematous. Lower lobe congested and oedematous. Heart healthy ; weight, fifteen ounces. Right ventricle contains a little fluid blood, not over half an ounce. Left auricle contains a little clotted blood. Stomach, at the fundus mucous membrane softened and partly destroyed by post-mortem changes. Pyloric end of stomach, mucous membrane studded with small white spots denoting chronic gastritis. Liver congested more than usual ; normal color and consistence. Kidneys uniformly congested, and otherwise healthy. Epiglottis, larynx and trachea congested and coated with mucus. Inner surface of the dura mater on the left side, chronic hemorrhagic pachymeningitis, with a small extravasation of blood on the left side, over the posterior portion of the parietal and anterior portion of occipital lobes. Pia mater of convexity normal, except discoloration over occipital lobes from blood. Brain neither congested nor anæmic, otherwise healthy. And, further, that at an inquest held five months after the first autopsy, the indentation on the neck was still distinctly visible ; could or not death have been produced by natural causes?

"The answer to this question was given by Drs. Porter, Swinburne, Bridges, Sherman and Wood, who agreed in stating that it could not.

"To each of these physicians the further question was put as to what in their opinion was the cause of death under the conditions named. All agreed in

¹ *Forbes v. Ins. Co.*, 10 Ct. of Sess. 434 ; cited *Bliss on Life Insurance*, § 124. That falling, subsequent to the effecting the insurance, into habits of intemperance, causing death, does not avoid the policy when there is no clause in the policy incorporating a covenant or warranty not to fall into such habits, see *Knecht v. Ins. Co.*, 90 Penn. St. 118 ; cited *supra*, § 903. That habitual intemperance not seriously affecting health does not avoid a policy which recites that the company is not to be liable in case the insured became so intemperate as seriously to affect his health, see *Odd Fellows' Ins. Co. v. Rohkopp*, 94 Penn. St. 39. But see *Shader v. Ins. Co.*, 66 N. Y. 441.

§ 917. *Death to be inferred from circumstances.*—The presumption of continuance of life, which exists in cases where a person

answering positively that death was produced by strangulation with a rope or cord.

“The following question was asked in regard to the furrow:

“Question 3. ‘Assuming that the body of a man weighing in the neighborhood of two hundred pounds, forty-one years of age, having a full, fleshy neck, about two hours after death is placed upon a board on its back, with the head raised upon a book and two pillows, and left in that position for about nine hours; and then placed in an ice-box with its head elevated at an angle of about forty five degrees, and left there for about forty-eight hours, and then removed and placed flat on a table; is it possible that a heavy indentation, commencing near the Adam’s apple, and running upward and backward at an angle of about forty-five degrees on either side to within less than two inches of meeting in the rear, could be produced by the changes in position stated?’

“The negative answer which was given by the experts to whom the question was put, seems to me entirely correct. I cannot conceive how a fold or crease made by bending the neck should deserve the use of the term ‘heavy indentation’ to describe it, and it is still more inconceivable to me that a fold, or crease should be made in the *back of the neck* by bending the head forwards, which would necessarily stretch the parts said to be folded. Further, a crease made in the manner described would be most marked in the front of the neck where the centre of the fold would occur, whereas the indentation was not visible at this place. Moreover, the plaintiff’s experts stated that the indentation involved the subdermal adipose tissue of the sides of the neck, and it is very hard to understand how a crease made by bending the neck forward for a day or two could do this and be so deeply impressed as to remain distinctly perceptible after the body had been buried five or six months.

“In concluding this statement of the case of Col. Dwight, it remains only to call attention finally to the remarkable agreement that there is in the testimony, and to the fact that there was extremely little conflict, practically no conflict at all, between the experts; that the sole contradiction of any importance was between Messrs. Van Vradenburg, Ayres and Lee on the one hand, and the experts on the other. If the former witnesses were correct in affirming that there was no indentation in the neck directly after death, the theory of strangulation with a cord drops; although it would still be proved by the internal appearances that death was caused by mechanical asphyxia produced in some other way than by a cord. It must be remembered that it is a well-known fact that in suicidal hanging, in which the suspension has been only for a few minutes, the cord-mark acquires its color only a few hours after death, and then becomes more prominent; that Col. Dwight was a heavily bearded man, and that his beard might have hid the fresh indentation from an unsuspecting undertaker. If, finally, it is considered that there is an absolute conflict of testimony, I must leave to the judgment of my readers the probability of the truth being upon the side of Van Vradenburg and the undertaker, with his

living a short time since is inferred to be living now, is variable, increasing or diminishing in force with the facts of the case. It is

assistant, or on that of Drs. Swinburne, Sherman and Bridges, who especially testified to the medico-legal facts in the case, and were corroborated in almost every particular by the notes written at the autopsy and signed by each of the fifteen doctors there present, and also by the evidence of two laymen, Freeman and Hitchcock, as to the appearance of the indentation at the second autopsy." The subject of strangulation is discussed in a prior section. (*Supra*, § 479.)

In *Union Mutual Life Ins. Co. v. Reif*, 36 Ohio St. 596, it was held that a policy of life insurance is to be vacated, if either of the answers to the following questions was false or untrue:

"Has the party whose life is to be insured ever been intemperate?" "No." "Is the party now of correct and temperate habits?" "Yes." It was also ruled that these questions and answers refer to the habits of the insured as to the use of intoxicating liquors, and not to occasional practices; and if his usual and general habits were to abstain from intoxicating drinks, or to use in moderation, an occasional indulgence to excess does not render the answers false or untrue. But it was held not to be necessary to the existence of intemperate habits, that the excessive use of intoxicating liquors should be continuous and daily, and an instruction to the jury, that a continuous and daily use of intoxicating liquor is necessary to constitute such a habit, was held to be erroneous.

Johnson, J., in giving the opinion of the court, said: "The ninth request was, that if the jury found that the applicant was, before the date of his application, addicted to periodical spreeing or getting drunk, without the knowledge of the company or its agents, the policy would be void, even though there were periods of longer or shorter duration in which he was duly sober." The eleventh was in substance the same, that "if he was in the habit of periodically getting drunk, even though there were times and occasions of longer or shorter duration in which he was duly sober," the policy was void.

Each of these requests was refused, and in lieu thereof the court charged that it was obvious that these questions are not, whether the insured was ever drunk, or whether he ever used intoxicating liquors; "but whether he was ever intemperate; that is, whether at any period of his life his usual and daily habits were such as to constitute and render him what is known as an intemperate man—a man habitually under the influence of intoxicating liquor." An occasional excess in the use of intoxicating liquor does not; it is true, constitute a habit, or make a man intemperate within the meaning of this policy; but if the habit has been formed and is indulged in, of drinking to excess and becoming intoxicated, whether daily and continuously, or periodically, with sober intervals of greater or less length, the person addicted to such a habit cannot be said to be of temperate habits, within the meaning of this policy.

In view of the fact, that the evidence strongly tended to show that it was the habit of the insured to indulge to excess at frequent times, and did not tend to show a case of daily or continuous state of intoxication, this charge was

not a presumption of law ; and hence it readily yields to the inference arising from the expiration of a period beyond which the continuance

clearly misleading. From it the jury might well understand, and in view of the whole evidence, we think, may reasonably have understood that Charles Rief was of correct and temperate habits, although it was his habit to get drunk periodically and frequently, with sober intervals of longer or shorter duration.

"The habit of using intoxicating liquors to excess is the result of indulging a natural or acquired appetite, by continued use, until it becomes a customary practice. This habit may manifest itself in practice by daily or periodical intoxication or drunkenness.

"Within the purview of these questions it must have existed at some previous time, or at the date of the application, but it is not essential to its existence that it should be continuously practised, or that the insured should be daily and habitually under the influence of liquor. Where the general habits of a man are either abstemious or temperate, an occasional indulgence to excess does not make him a man of intemperate habits. But if the habit is formed of drinking to excess, and the appetite for liquor is indulged to intoxication, either constantly or periodically, no one will claim that his habits are intemperate, though he may be duly sober for longer or shorter periods in the intervals between the times of his debauches.

"In *Miller v. Mutual Benefit Insurance Co.*, 34 Iowa 222, the insured was shown to be a man who indulged in a periodical habit of drinking to excess, and protracting these debauches until his strength was exhausted. These excesses were not of long duration, and were followed by seasons of sobriety which would last for months. In one of these debauches he died of delirium tremens. It was held he died from intemperance. Who would say that such a man was of temperate habits? Such a habit of intemperance is quite as material to the risk, and equally as much within the terms of this policy, as the habit of daily intoxication. Indeed, high medical authority is not wanting to show that periodical drunkenness, the result of an uncontrollable appetite, is generally much more excessive, and therefore more dangerous than daily habitual intoxication.

"But it is claimed that the latter part of this charge cures any error that may exist, caused by the use of the word 'daily' in the first part. We think the concluding sentence, 'If you find from the evidence that Charles Reif did so habitually use intoxicating drinks to excess, then the plaintiff cannot recover.' referred the jury back to the definition, wherein they are told that if his usual and daily habits were to be under the influence of liquor, he could not recover, and was not a modification, but a reiteration of the error."

In *New York Life Ins. Co. v. La Boiteaux*, Sup. Ct., Cin., 1875, 5 Big. Ins. Cas. 437, it was held that a clause in a policy prohibiting the use of opium, did not preclude recovery in a case in which the opium was administered *bona fide* by a physician. "We find," said Yaple, J., "no error in the charge of the court. Surely the policy does not cover the fatal administration of alcohol or

of life is improbable. But there are many other circumstances which may exist to make death more or less probable. If a person has not been heard of for more than seven years, by those likely to have heard from him if alive, he is presumed to be dead, unless the circumstances of the case explain his not being heard from on grounds consistent with his continuance in life. But the time of death, when material, must be gathered from all the circumstances of the case, for there is no presumption as to when during the seven years he died. Among the facts, independent of this presumption of death after disappearance for over seven years, which may be noticed as affording an inference of death, may be mentioned the following: 1. Presence on board a ship known to have been lost at sea; the inference of death increasing in strength with the length of time elapsing since the ship-wreck. 2. Exposure to peculiar perils to which death will be imputed if the party has not been subsequently heard from. 3. Ignorance, as to the party disappearing, after due inquiry, of all persons likely to know of him if alive. 4. Cessation in writing letters and of communications with relatives, in which case the inference rises or falls with the domestic attachments of the party; it being held that the inference is peculiarly strong when a party who is domestic, attached to his family, and attentive to his business and social duties, suddenly, finally and without explanation, disappears.¹

opium to the insured by a physician, with the intention of curing him of any sickness or ailment resulting from any cause whatever, but relates only to death caused by the voluntary use of the one or the other, or both. And if the insured becomes sick from the excessive use of intoxicating liquors, and a physician has to be called in to treat him for his sickness, and nurses and attendants have to be employed to take care of him, and his sickness is not of itself fatal; but the physician, with the best of intentions and in the hope and expectation of a cure, administers a drug as medicine which is the immediate cause of his death, surely death cannot be the proximate result of the sickness. The intention with which the act causing death is done is immaterial. If an attendant had become impatient with La Boiteaux while waiting upon him in his sickness caused by intoxication, and, to keep him quiet, had struck him a blow upon the head with a bludgeon and thus killed him, that would have been the cause of his death, not the use of the intoxicating drink. And if he was killed by the opium administered to, not voluntarily taken, by himself, that, and not the liquors, was the cause of his death. In ascertaining the cause of death, the intentions of those causing it are wholly immaterial."

¹ Wh. on Ev., §§ 1276 *et seq.*; and as cases in which this question is connected with life insurance, see *Tisdale v. Ins. Co.*, 26 Iowa 170; *Lancaster v.*

§ 918. *Simulation to be guarded against.*—The distinctive inferences in the case of death have been already discussed.¹ That death

Ins. Co., 62 Mo. 12; Hancock *v.* Ins. Co., Id. 121. See Wackerle *v.* Ins. Co., 14 Fed. Rep. 23.

Mr. Angell (Fire and Life Ins., § 351), thus states the law: "In order to render the insurers upon a life liable, the event of death may (must) happen within the time prescribed by the policy, and as a doubt may exist whether the person upon whose death the liability depends is dead, a question of fact may be raised to be determined by the jury. All the authorities concur in stating the rule of the common law to be that the presumption of life with respect to persons of whom no account can be given, ends at the expiration of *seven years* from the time they were last known to be living; and that, after such a period of time, the burden of proof is devolved on the party insuring the life of the individual in question. The issue in such case being an issue of fact, the jury are at liberty to find the fact of death within the period of seven years, upon the circumstances proved in the case. The circumstances which have been stated to be material to this issue, are the age of the party, his situation, habits, employment, state of health, physical constitution, the place or climate of the country, whether he went by sea or land, the facilities of communication between that country and his former home, his habit of correspondence with his relatives, the terms of intercourse upon which he lived with them, in short, any circumstance tending to aid the jury in finding the fact of life or death—all these circumstances have been stated by Prof. Greenleaf as material. There must also be evidence, that learned author proceeds to say, of diligent inquiry at the place of the person's last residence in this country, and among his relatives, and any others who would have probably heard from him, if living; and also at the place of his fixed foreign residence, if he was known to have any. In Loring *v.* Steinman, 1 Met. (Mass.) 204, Shaw, C. J., in giving the judgment of the court, says: 'It is a well settled rule, that upon a person's leaving his usual home and place of residence for temporary purposes of business or pleasure, and not being heard of, or known to be living, for the term of seven years, the presumption of life then ceases, and that of his death arises. The presumption is greatly strengthened when the departure of an individual from his native place, the seat of his ancestors and the home of his brothers and sisters, and family connections; and still further when it was to enter upon the perilous employment of a seafaring life.'"

In Angell on Life Ins., § 379, is noticed the case of Rev. Thomas Waring, who disappeared from Elizabethtown, Hardin county, Kentucky, and was then, and still, believed by his relatives and friends to have been murdered. Some years before his death he had effected an insurance on his life, in favor of his wife, in the Nautilus Mutual Life Insurance Co. of New York, for \$5000. In January 1853, suit was instituted in Jefferson Circuit Court by Mrs. Waring, for the recovery of the sum named. One of the points relied upon by the defence was that he was not dead, but had absconded. The whole case turned upon this.

¹ *Supra*, § 620 *et seq.*

may be simulated for the purpose of deceiving an insurance company is illustrated by several reported cases, one of the most conspicuous of

The case was submitted to the jury upon the evidence, and a verdict rendered for plaintiff for the amount of the policy with interest: Taylor's Med. Jur. 823, where this case is given as above.

In *Wackerle v. Mutual L. Ins. Co.*, Cir. Ct. Mo. 1883 (12 Ins. L. J. 87), it was held that where the evidence regarding the alleged death of the insured is various and conflicting, the verdict will not be interfered with because a part of the alleged proof was overthrown. "A full examination," said Treat, J., "has been made of the evidence, which was peculiarly for a jury. It was on both sides full of doubts, inconsistencies and contradictions. Turn as we may in the analysis of the evidence, strange and irreconcilable aspects are presented. The first point to be established by plaintiff was the death of her husband. That rested on the testimony of several witnesses concerning the railroad accident, and the identity of the person killed thereby. The evidence of the plaintiff and others as to the skeleton exhumed four or five years after such killing establishes, to the satisfaction of the court, that the exhumed skeleton was not that of the man killed on December 25, 1872, supposed to be William Wackerle. The court directed the attention of the jury especially to that fact, not that it was conclusive, but because it tended to show what weight should be given to other testimony. It may be that the exhumed skeleton was not that of William Wackerle, and hence the accuracy of the plaintiffs' testimony became questionable. Yet there was other evidence as to the death of the party killed independent of exhumations in 1877. It was, therefore, for the jury to decide whether, despite the mistakes as to the identity of the skeleton, William Wackerle was killed as alleged. The case as presented by the evidence was remarkable in many other aspects, concerning which it is useless to comment. There are several depositions wanting, which the court has been anxious to read and analyze, but by some accident they have disappeared. Hence the court has to rely on memory as to their contents; and if a new trial is granted the plaintiff [will be required] after a long lapse of time to supply the same. So far as the court was justified in alluding to or commenting on the evidence, it pointed in its charge sharply against the plaintiffs' claim so far as identity depended on the exhumed skeleton. Still the jury reached the conclusion that the plaintiffs' husband was killed in 1872, as alleged, and consequently, that the person produced by the defendant and claiming to be William Wackerle, husband of the plaintiff, was not what he pretended. The case was tried at great length, and the largest scope was given to a searching inquiry. Its novel aspect induced the court to admit every item of testimony that could shed light on the subject. After full deliberation on the varied, inconsistent and contradictory evidence, the jury reached a conclusion which was their exclusive province, and the court does not feel justified in interfering therewith. The motion for a new trial is overruled."

In *Hancock v. Ins. Co.*, 62 Mo. 121, reported in 5 Big. Ins. Cas. 248, the question of presumption of death is thus discussed by Wagner, C. J.:

"In relation to the presumption of death arising from mere absence, the rule

which is that of Udderzook, tried in West Chester, Pennsylvania, in 1873, for the murder of Goss.¹ Goss's life had been insured, and a

at common law is well established. Where a party has been absent seven years, without having been heard of, the only presumption then arising is, that he is dead; there is none as to the time of his death, as to whether he died at the beginning or at the end of any particular period during those seven years. If it be important to any one to establish the precise time of such person's death, he must do so by evidence of some sort, to be laid before the jury for that purpose, beyond the mere lapse of seven years. Best Pres. Ev., § 140; Knight v. Nepean, 5 Barn. & Ad. 86; affirmed in Exch., 2 Mees. & Wel. 894; Spencer v. Roper, 13 Ind. 333; In re Benham's Trust, L. R., 4 Eq. 415; McCartee v. Campbell, 1 Barb. Ch. 456; In Burr v. Sim, 4 Whart. 150, Mr. Justice Gibson denied the common-law rule as generally laid down, and stated the true doctrine to be that 'the presumption of death, as a limitation of the presumption of life, must be taken to run exclusively from the termination of the prescribed period, so that the person must be taken to have then been dead, and not before.' Whatever may be the true rule on this subject, all the authorities agree that when a party has been absent seven years since any intelligence has been received of him, he is, in contemplation of law, presumed to be dead. This length of time may be abridged, and the presumption applied earlier than seven years, by showing special facts and circumstances which reasonably conduce to that end. But evidence of some sort will, in all cases, be necessary. In White v. Mann, 26 Me. 361, the court say: 'When a person leaves his usual place of residence with an intention of returning to it, and continues to be absent for seven years, without being heard of, he is presumed to be dead. The time when such presumption will arise may be greatly abridged by proof that the person has encountered such perils as might be reasonably expected to destroy life, and has been so situated that, according to the ordinary course of human events, he must have been heard of if he had survived.'

Dr. Tidy, Leg. Med. 395, gives the following:

Hiorns v. Railway Passengers' Ins. Co., Exch., Guildhall, Feb. 1862. Hiorns, single, Oct. 26, insured his life against accident on September 6, 1856. On September 13th, he went to Brighton, taking a return ticket. He had a bath on the morning of the 15th. In the evening of the 15th he parted from his friends, expressing his intention to go to his lodgings and to have a second bath before returning to London. He was seen to go towards the sea, but in spite of all searchings was never heard of afterwards. A bundle of clothing was found on the steps of a bathing machine the day he was missed, which were identified as belonging to him. On October 30th (45 days after his disappearance) a naked body was washed ashore at Walton-on-Naze, 150 miles from Brighton. His brother (the plaintiff in the action) stated at the inquest that to the best of his belief it was the body of Hiorns, but that positive identity was difficult owing to the complete destruction of the features. The coroner's jury

¹ See *infra*, § 920, Wh. on Hom. App., 75 Penn. St. 340.

conspiracy was concocted between himself, his wife and Udderzook, by which the insurers were to be made, on the assumption of his death,

found the body was that of a person unknown. The company urged in defence at the trial that the whole thing was a fraud, and that Hiorns was alive. It was proved he was a bankrupt in 1855; also that he had effected several insurance policies in September 1856, and made a will directing that the policies should after his death be realized to pay his debts. The jury were unable to agree.

In *Watson v. England*, 8 Jur. 1062, M. B., then about sixteen years of age and unmarried, left her father's house in the year 1814, and was never heard of afterwards as being alive. About the year 1839, however, her father told deponent that he had intelligence, by a man who came from London, that his daughter, M. B., was dead. The master found that she was dead, but that sufficient evidence had not been laid before him to enable him to find when she died, or whether she died unmarried and without issue. An exception that the master ought to have found that she died previous to the end of the year 1821 was overruled. An exception that the master ought to have certified that M. B. had died unmarried and without issue allowed. Tidy's Leg. Med. 405.

In *Church v. Smith* (Exchequer, Dec. 1853), it appeared that fourteen years previously to the case coming before the court, the husband deserted his wife, and she had not heard of him for twelve years. Question: Was she a widow, and able to sue in her own right? She was nonsuited, however, by the husband appearing in the witness-box at the trial. [The Chief Baron remarked, that but for this he should have directed the jury, if it had been proved that he had not been heard of for twelve years, to consider him dead.] Tidy's Leg. Med. 405.

In *Prudential Assurance Co. v. Edmunds*, L. R., 2 App. C. 487, a policy on the life of R. Nutt was granted in 1863. An action was brought in 1874, the question being whether Nutt was then alive or dead. He had been absent from his former home more than seven years, having left it in 1867. His sister and brother-in-law, who lived where he had formerly lived, gave evidence of his absence, and said that they had not heard of him for more than seven years. On cross-examination they admitted that a niece of his had said that when she was in Melbourne in December 1872, or January 1873, she saw a man whom she believed to be her uncle Nutt, but he was lost in the passing crowd before she was able to get to speak to him. No effort appeared to have been made to find him at Melbourne, and the other relatives believed the niece to have been mistaken. The jurymen expressed a similar opinion. The judge directed the jury that they "could not say that the man had not been heard of during the last seven years when one of his relatives declared that she had seen him alive and well within the last three years; and still less could they say that he had never been heard of when all the members of the family stated that they had heard what she had stated;" and "that the ground for the presumption of death from a man having been absent for seven years was entirely removed by the direct evidence that every relative had heard that he was alive." And, lastly, the judge said to the jury: "Under these circumstances, unless you are pre-

to pay over the insurance money to his wife. A dead body was placed in a wooden building in Baltimore he was accustomed to work in;

pared to find that he was dead in April 1875, and find it upon evidence which tends to prove exactly the contrary, and in the absence of that evidence upon which alone the presumption should be raised of his death, your verdict ought to be for the defendants." The Court of Appeals considered this to be a misdirection, and ordered a *venire de novo*. On appeal to the House of Lords, the Lords were equally divided, and so the decision of the Court of Appeals stood. "When there is a case tried before a judge sitting with a jury, and there arises any question of law mixed up with the facts, the duty of the judge is to give a direction upon the law to the jury so far as to make them understand the bearing of the law upon the facts. Further than that it is not necessary to go." Per Lord Blackburn, Tidy Leg. Med. 408.

Dr. Tidy (Leg. Med. 408) gives the case of a man named Vital Douat, who, before his bankruptcy, insured his life in an insurance company of Paris for 100,000 francs. His bankruptcy was subsequently declared fraudulent. He then came to England, purchased a coffin, procured a certificate of death from the registrar, himself followed the coffin (which he loaded with lead) to the grave in a churchyard in Essex, where it was interred. This done, his wife then went to Paris and presented to the company copies of the registry of the death and the burial of her husband, and claimed the amount of the insurance. The coffin was exhumed, the man was taken into custody at Antwerp, and given in charge to the French authorities.

In a note to Ram on Facts, 3d Am. ed. 120, is the following: "We remember a case where a man left the city of New York without the knowledge of his wife and family. Soon after a body was found, which was supposed to be his, but so mutilated and decomposed as to render the identification uncertain. It was, however, the belief that he was dead, and this belief was continued until, after an absence of more than twenty-nine years, he returned. He had never been heard of during his absence. He had no welcome to his return, which was not altogether voluntary. Living in a distant state, under an assumed name, he had fallen sick, and, being in poverty, to obtain assistance, he told of property he had in New York, his right to which he was willing to exchange for present shelter and support. This excited the cupidity of one of his hearers, who brought him on to New York, took from him a conveyance of the property, and set to work to recover it. We, on behalf of the surviving relatives of his wife, saw this man, and endeavored in vain to extract from him a reason for his strange conduct. We would mention another case of prolonged absence and subsequent return, the account of which came from the man's wife, and under circumstances which led us to believe her statement to be true. A. B. was a portrait painter in Brooklyn; he suddenly disappeared, and all efforts to trace out what had become of him were unavailing. After an absence of nearly fifteen years, he one day quietly entered the house where his wife resided, remained there a portion of the day, refusing in any way to account for his absence. Before night he again disappeared, as suddenly and as completely as

this building was set fire to, and the charred remains were declared to be the body of Goss. Goss, in order to prevent discovery, was to disguise himself, and hide himself from observation, in New York. After a while he became restive under this restraint, and threatened Udderzook with betrayal. Udderzook thereupon decoyed him to West Chester, Pennsylvania, and there murdered him. But Udderzook did not succeed in covering his own tracks; and the result was that he was convicted and hung.

When the insured has disappeared, and has not been heard of for some time, the question of his death is to be determined on all the circumstances of the case. In some cases, where there is no ground to suspect fraud, and where the insured's absence can only be satisfactorily explained on the assumption of death, death will be inferred, although a comparatively short period has elapsed since the disappearance.¹

§ 919. "*Accident*" insurances subject to the same considerations.—"Accident" insurances, or insurances against death or injury from accident, are subject, in general, to the same considerations as those which relate to life insurance. There are, however, several specific differences. In suits on "accident" policies, death from accident must be proved. If it cannot be proved, then the plaintiff's case fails. Thus, in a New York case the policy was for the payment of a specified sum after proof that the insured "shall have sustained bodily injuries effected through external, violent and accidental causes, and such injuries alone shall have occasioned death, provided that this insurance shall not extend to any death or disability which may have been caused wholly or in part by any surgical operation, medical or mechanical treatment for disease." The evidence was that the deceased had been under medical treatment for nervousness, for which a limited dose of opium had been prescribed. He took by mistake an overdose from which he died. It was held that the case was not one of accident under the policy.²

In a case in Pennsylvania, in 1883, it appeared that the defendant, a mutual accident insurance company, issued a certificate of membership on the previous occasion, and, although twelve years intervened the second disappearance and the narration of the circumstances to us, he had neither returned nor been heard of."

¹ John Hancock Ins. Co. v. Moore, 34 Mich. 41.

² Bayliss v. Ins. Co., 6 Ins. L. J. 109; 14 Blatch. 143; see Hill v. Ins. Co., 22 Hun 187.

ship or policy of insurance upon the life of one A. The certificate provided that the amount specified therein should be paid only on clear proof that the death of the party insured "was caused by external violence and accidental means;" no payment was to be made if the death was caused "by the taking of poison," or was "the result of design either on the part of the member or of any other person." A. died in consequence of his having taken a certain deadly poison which he mistook for a harmless beverage. It was held, that, notwithstanding the poison was innocently taken, the company was not liable under the terms of the certificate.¹

¹ *Pollock v. U. S. Accident Ass.*, 12 Weekly Notes 559; 12 Ins. L. J. 314.

In *Burkhard v. Ins. Co.*, 39 Leg. Int. 420; 14 Weekly Notes 33, "The insured (to adopt the statement of Mercur, C. J.,) was travelling by rail through Indiana on his way to Kentucky. The train stopped on the bridge across the Ohio river, by reason of the draw part of the bridge being open. He went to the front platform of the coach in which he was riding and stepped off and through a hole in the floor of the bridge causing his death; this hole was about three feet wide and four feet long. It was caused by the removal of some planks during the making of repairs." This was held not to be a "voluntary exposure to unnecessary danger," or "being as the road-bed," within the exceptions of the policy.

"The present is not like a case between a passenger and a railway company, in which the company may be exempt from liability for damages arising from negligence of the passenger, not voluntary. Nor did the act of the insured prove such a reckless exposure of his person, nor obvious risk of danger, as to bring him within the application of the rule declared in *Morel v. Miss. Valley Ins. Co.*, 4 Bush 535; *Lovell v. Accident Ins. Co.*, 3 Ins. Law J. 877; *Sawtelle v. Railway Pass. Ass. Co.*, 15 Blatch. 216, and kindred cases."

In *Mutual Life Ins. Co. v. Keyser*, Sup. Ct. Penna. 1883, 14 Weekly Notes 86, the evidence was that a policy in a mutual insurance company covenanted to pay the assured, in case of accidental injury, a certain sum for every week he might be disabled from following his usual occupation, not exceeding ten weeks. A by-law of the corporation provided that in case any suit was brought "after the expiration of six months next after the loss shall have occurred, the lapse of time shall be deemed conclusive against the validity of the claim." The assured suffered an accident which disabled him from working for more than ten weeks. He brought this suit more than six months after the date of the accident, and less than six months after the expiration of ten weeks after the accident. The court below instructed the jury that the limitation of six months named in the by-law did not begin to run until the cause of action was complete, which was not until the expiration of ten weeks after the happening of the accident, and that the action, therefore, was brought within six months after the loss

§ 920. *Insurance as a motive to murder.*—It has already been noticed that by statute in several jurisdictions insurances of the life

occurred, within the meaning of the by-law. This was held by the Supreme Court not to be error.

McCarthy v. Ins. Co., 8 Biss. 362, was a suit on an accident policy, where the death was alleged to have occurred by reason of the rupture of a blood-vessel, sustained while exercising with Indian clubs. It was held that, if the deceased used the clubs for the exercise in the ordinary way, and without the interference of any unusual circumstances, the injury was not accidental; but, if there occurred any unforeseen accident, or involuntary movement of the body, which, in connection with the use of the clubs, brought about the injury, then such means were accidental, and within the terms of the policy. In the same case, it appeared that by the terms of the policy, it was provided that the injury must be the proximate and sole cause of death. It was held that, if death ensued as a consequence of inflammation, and the formation of abscesses, and the accumulation of injurious substances in the lungs, and these were the necessary results of a rupture of the blood vessel, then such injury was the proximate cause of the death. But, if an independent disease supervened upon the injury, or a latent disease was brought into activity by the injury, then such injury was not the proximate cause.

It has been held by the Supreme Court of Iowa, that, under an accident policy providing that the holder should comply with the rules of the common carrier, and exercise due diligence for self-protection, a passenger on a railway car, thrown from the steps where he stood, while the train was approaching a station, in violation of a known rule of the company, cannot recover: *Bon v. Railway Pass. Assurance Co.*, 56 Iowa 664; s. c. 41 Am. Rep. 127. See as tending in the same direction: *Tooley v. Railway Passenger Ins. Co.*, 3 Biss. 399; 4 Big. Ins. Cas. 34.

In *Mallory v. Ins. Co.*, 47 N. Y. 352; 3 Big. Ins. Cas. 696, the defendant issued an accident policy of insurance upon the life of M., who, prior to procuring the policy had been a canvasser for applications for insurance with defendant. The president had directed him to be cautious, as the company did not wish to insure insane persons, &c. Some time prior to the issuing the policy M. had been insane; had been sent to an asylum, and discharged cured; and from that time forward had been sane. He did not disclose the fact of his former insanity upon applying for a policy, but stated there were no circumstances rendering him peculiarly liable to accident. It was held by the New York Court of Appeals that the conversation with the president had no tendency to show a fraudulent concealment of material facts, and that it was not error in the court to charge that the conversation had no bearing on the application. It was also ruled that the court below was correct in charging, that if the deceased did not conceal any facts which in his own mind were material in making the application, the policy was not void; no inquiries being made. It further appeared that by the terms of the policy the sum insured was to be paid if the insured "shall have sustained personal injury caused by any accident, * * * and such

of a person in which the insurer has no interest are made invalid;¹ and, aside from such statutes, there is little question that a merely

injuries shall occasion death," &c. The Court of Appeals ruled that if a wound received by the deceased, being produced by an accident, did not cause death, but did cause him to fall into the water, where he was drowned, then the death was accidental and defendant liable. It was also held that where, from the facts of the case, it appears that a violent death was either the result of accidental injuries or of a suicidal act of deceased, the presumption of law is against the latter. See, also, *Shader v. Ass. Co.*, 5 Thomp. & C. 643; 5 Big. Ins. Cas. 331; aff. 66 N. Y. 441, to the effect that mere intoxication by the deceased at the time of the accident precludes recovery, when this is provided in the policy; and that in such cases it is not necessary for the company to show that the accident resulted from the deceased's drunkenness.

Tuttle v. Ins. Co., 134 Mass. 175, was a suit tried in 1882-3, upon a policy of insurance against accident, issued by the defendant corporation upon the life of Stephen Tuttle, and made payable to the plaintiff, his wife. At the trial, before Devens, J., the evidence showed that, about ten o'clock in the evening of March 13, 1879, Tuttle was killed by being struck by a railroad train while running along the tracks in front of it, for the purpose of getting on a train approaching in an opposite direction on a parallel track. The judge, at the defendant's request, ruled that the action could not be maintained; directed the jury to return a verdict for the defendant; and reported the case for the consideration of the full court. If the ruling was correct, judgment was to be entered on the verdict; otherwise, a new trial was to be had. The material provisions of the policy appear in the opinion which was delivered by C. Allen, J., as follows: "The policy provides, among other things, that no claim shall be made under it 'when the death or injury may have happened in consequence of exposure to any obvious or unnecessary danger.' It is also made subject to the condition, that 'the party insured is required to use all due diligence for personal safety and protection.' Both of these provisions were violated by the act of the deceased in going upon and along the track of the railroad, under the circumstances stated in the report. *Wright v. Boston & Maine Railroad*, 129 Mass. 440, 443. No two cases are precisely alike in their facts; and what constitutes due care must depend upon the facts of each case. But the conduct of the deceased was such as, in the words of Mr. Justice Colt, is 'condemned by the general knowledge and experience of all prudent men, and is conclusive on the question of due care.' The danger was obvious, the exposure to it unnecessary, the want of due diligence clear; and the death of the insured occurred in consequence thereof. See also *Willis v. Lynn & Boston Railroad*, 129 Mass. 351; *Johnson v. Boston and Maine Railroad*, 125 Mass. 75; *Allyn v. Boston & Albany Railroad* 105 Mass. 77; *Cordell v. New York Central & Hudson River Railroad*, 75 N. Y. 330; 70 N. Y. 119; 64 N. Y. 535; *Baxter v. Troy & Boston Railroad*, 41 N. Y. 502; *McCarty v. Delaware & Hudson Canal*, 17 Hun 74. The plaintiff con-

¹ *Supra*, § 900.

speculative and gambling insurance would be held void at common law.¹ It is, *a fortiori*, plain that a party who effects an insurance on another's

tends that it was not the exposure or negligence of the assured which caused his death, but the coming upon him of the locomotive engine, the bell or whistle of which may not have been sounded; that this was a new force or power which intervened, of itself sufficient to stand as the cause of the misfortune; that it was for the jury to determine whether or not the railroad corporation was negligent; and that if so, the negligence of the insured, if it existed, was too remote to defeat the policy. *Insurance Co. v. Tweed*, 7 Wall. 44, 52. *Milwaukee & St. Paul Railway v. Kellogg*, 94 U. S. 469, 475. *Scheffer v. Railroad Co.*, 105 U. S. 249, 252. But without speculating as to possible cases, we do not think that the doctrine relied on is applicable to this case. If a person voluntarily places himself in a position where he is exposed to an obvious danger, and the precise injury happens to him which there is reason to fear, it cannot fairly be held that the language of this policy was not intended and understood to be applicable to such a case. For example, if one while walking on a railroad track is assaulted by a robber or a dog, or is struck by lightning, his act of travelling there has no tendency to produce the injury, and is not to be deemed a contributory cause thereof. But on the other hand, if one who goes into battle is hit by a bullet, or if one who goes up in a balloon is blown out to sea by the currents of the air, or if one who makes a railroad track his path for travel is run over by a passing locomotive engine, he must ordinarily in any legal question be held to take the risk of those results. There is in each of these cases such an association of cause and effect, that the one must be held to have contributed to the other. To hold that the death of the assured in the present case did not happen in consequence of his exposure to the risk, but from a new force or power which intervened, would be to fritter away the language of the policy by metaphysical distinctions too fine to enter into the understanding or contemplation of parties engaged in the practical business of making a contract of insurance. We must assume that the assured read his policy, and was acquainted with its language and attached some practical meaning to it. See *White v. Lang*, 128 Mass. 598; *McGrath v. Merwin*, 112 Mass. 467; *Norton v. Eastern Railroad*, 113 Mass. 336; *McDonald v. Snelling*, 14 Allen 290; *Cliff v. Mutual Benefit Ins. Co.*, 13 Allen 308, 319; s. c. 99 Mass. 317, 329; *Harper v. Phoenix Ins. Co.*, 19 Mo. 506. Judgment on the verdict."

In *Smith v. Accident Insurance Co.*, L. R., 5 Ex. 302, a policy of insurance against death from accidental injury contained a condition that it was not to insure against death arising from rheumatism, gout, hernia, erysipelas or any other disease or secondary cause arising within the system of the insured before or at the time of or following such accidental injury (whether causing such death or jointly with such accidental injury). The insured, on Saturday, April 24th, accidentally cut his foot against the broken side of an earthen-ware pan. On the Thursday following, erysipelas supervened and he died of that

¹ Whart on Cont. §§ 449 *et seq.*

life for the purpose of murdering the insured and then obtaining the money on the insurance, would be debarred from recovery.¹ It is

disease on the next Saturday. The erysipelas was caused by the wound, and but for the wound he would not have suffered from erysipelas. In an action by his executrix to recover the amount insured, it was held (Kelley, C. B., dissenting), that the insurers were protected by the above condition and were not liable : Tidy Leg. Med. 404.

In Winspear *v.* The Accident Insurance Co., Limited, L. R., 6 Q. B. D. 42, W. effected an insurance with the defendants against accidental injury, and by the terms of the policy the defendants agreed to pay the amount to W.'s legal representatives should he sustain any personal injury caused by accidental, external and visible means, the direct effect of such injury being to cause death. The policy also contained a proviso that the insurance should not extend "to any injury caused by or arising from natural disease, or weakness or exhaustion consequent upon disease." During the time the policy was in force, and whilst the assured was crossing a stream, he was taken with an epileptic fit and fell into it, and was there drowned whilst suffering from the fit; but he did not sustain any personal injury to occasion death, other than drowning. It was held that W.'s death was occasioned by an injury within the risk covered by the policy, and to which the proviso did not apply. The reasons given in the Court of Appeal were, that the drowning was the cause of death, and the fit was only a cause of the cause of death. See Trew *v.* Railway Assurance Co., 30 L. R., Eq. 317 ; 22 L. T. N. S. 820 ; Tidy Leg. Med. 404.

In Martin *v.* Traveller's Insurance Co., 1 F. & F. 505 ; Tidy Leg. Med. 404, an insurance against accident contained an express clause excepting "death arising from gout, hernia or other disease arising within the system." In this case the insured had a fall, which proved the primary cause of rupture and strangulated hernia, after an operation for which the assured died. It was held that his representatives were entitled to recover, and that the case did not come within the exception.

¹ Dr. Taylor (Med. Jur., 7th Am. ed. 867), gives the following :—

"Some of the poisonings which took place at Rugeley in 1855-6, and which culminated in the conviction and execution of the notorious William Palmer for the murder of J. P. Cook, originated in the easy system of raising money by the insurance of lives. The body of Ann Palmer, the wife of the prisoner, had been lying fifteen months in the grave, under a professional burial certificate of death from *bilious cholera*, when the sudden death of Cook and the detection of antimony in his body, led to the exhumation of this lady. It was then found that she had died from the effects of antimony, which was detected by Dr. Rees and myself in all parts of the body, even in the ovaries. When the history of the illness which preceded death was gone into, it was found that the symptoms were consistent with the effects of tartarized antimony, but not with those of bilious cholera or any other disease. Antimony had not been prescribed for the deceased during her illness, and it was therefore clear that it must have been administered to her by some one, up to within a short period

possible, indeed, to conceive of cases in which he would be acquitted of the murder and yet lose the suit on the insurance, since to convict in

of her death. With an actual life interest in his wife's property to the extent of only 3000*l.*, and within the short period of nine months of her death, William Palmer made, or caused to be made, proposals for insuring her life in eight different offices for an aggregate sum of 33,000*l.* Three of these proposals made by *himself*—to the Norwich Union in December 1853, for 3000*l.*; to the Scottish Equitable in January 1854, for 5000*l.*; and to the Sun in Februarry 1857, also for 5000*l.*—were accepted by these offices. He thus contrived in less than three moths to effect a total insurance of 13,000*l.* to cover a life interest of 3000*l.* on his wife's property! The other proposals, to the amount of about 20,000*l.*, were declined by the offices to which he applied. The total premiums paid by Palmer on the three policies amounted to 388*l.*; and he was at the time so pressed for money, that he drew a bill which was actually discounted on the security of the policies, so that he contrived to make the policies pay for themselves. As he was in embarrassed circumstances, and unable to meet bills of this kind without becoming still more deeply involved in debt, the realization of the policies by the death of his wife became to him a matter of necessity. Within little more than six months after effecting the insurance on her life, the wife died from poison, under his immediate superintendence. On her death, these large sums were claimed by Palmer, and were paid to him by the offices. Although there was at the time some suspicion that the wife had died from poison, there was no inquest or inspection, and the body was hastily buried. These facts only came to light more than a year afterwards, during the investigation of another murder in 1855. It seems that the general respectability of Palmer, his social and professional position, together with the two medical certificates of the cause of death of the wife, checked any intention which might have existed on the part of these offices to resist the payment of the policies. William Palmer, however, carried his life insurance speculations much further than this. Having no pecuniary interest whatever in the life of his brother, Walter Palmer, he either made or induced him to make proposals for the insurance of his life, in various offices, to the amount of 82,000*l.* The Prince of Wales office accepted the proposals to the extent of 13,000*l.* under certain limitations. On the 16th August 1855, Walter Palmer died suddenly, in the presence of his brother and another man of doubtful character, with whom he had recently placed him as a lodger; and it was rendered highly probable, if not proved, that the prisoner William had shortly before purchased at a druggist's a bottle of prussic acid. The policy had been previously assigned by Walter to William, for a nominal consideration; but when William Palmer made application for the amount after the death of his brother, the office refused payment; and, for very good reasons, Palmer failed to enforce it. He subsequently tried, but ineffectually, to insure, to the extent of 25,000*l.*, the life of his groom, George Bates, described by him in his proposal as a 'gentleman' of independent means; and he advised a man named Cheshire, the postmaster of Rugeley, also to make proposals on his life to the extent of 5000*l.* and assign the policies to

a criminal suit, guilt must be proved beyond reasonable doubt, while a civil suit would be defeated if guilt should be established by a mere preponderance of evidence.¹

him. But for the revelation of facts connected with the death of Cook, these two persons on whose heads a heavy life insurance value had thus been set, would have been the next victims. * * *

"It is now the custom of offices to require that a statement whether the life has been already proposed to other offices, and whether the proposal has or has not been accepted. But this is only a partial method of checking such nefarious speculations. In France and most Continental States insurances of this kind are said to be strictly forbidden, not for the prevention of gambling (which is rather encouraged), but in order to guard society against the risk of the persons insuring contriving the death of the insured. That these regulations are not sufficient to guard against secret murder and speculation in human life is, however, clearly established by the case of Dr. De la Pommerais, who, in May 1864, was convicted in Paris of the murder of a woman named Pauw. The reader will find an account of the medical circumstances connected with this act of murder, which equals, if it does not surpass in atrocity, the murders perpetrated by William Palmer on his wife and brother."

Dr. Tidy, Leg. Med. 40, refers to a Scotch insurance case, cited in Taylor's Med. Jur., vol. i., p. 672, and vol. ii., p. 640, in which the death of the insured was caused from pistol shots. Certain circumstances pointed to a murder having been committed by a certain medical man, who had insured the man's life. Prisoner was acquitted, on the ground that there were no circumstances directly fixing the crime on him. It was shown that the prisoner could have no lawful pecuniary interest in the life of the man he insured.

Dr. Tidy, Leg. Med. 471, also gives a case related by Tardieu, Ann. d'Hyg., 1866, vol. ii., p. 410. Case of J. P. Hoffstedt. This man was insured by another person (Swensson). Swensson was prosecuted by the office on the ground that he agreed to give deceased brandy *ad lib.*, provided he took no other nourishment. It was also suggested that Swensson had given Hoffstedt arsenic. Prisoner was acquitted, from want of direct proof, but a verdict was given for the office, because the case was regarded as one of suicide, through the agency of a person who would benefit by the death: Tidy 471.

In Tardieu and Sonnenschein, p. 209, is mentioned the case of Dr. De la Pommerais, who insured the life of a woman (Pauw), and then poisoned her with digitaline. The defendant, in *R. v. Cotten*, Durham Lent Assizes, 1873, was tried for the murder of her stepson by arsenic. She was said to have killed twenty persons, all of whose lives she had insured in different offices. She was found guilty and executed. Lidy *ut sup.* 401.

A remarkable case of this class is that of *State v. Hunter*, reported in respect to the law questions before the Supreme Court, in 40 N. J. L. 495. The proof was that Hunter, the defendant, was concerned in the assassination of Armstrong, after having previously insured Armstrong's life.

¹ See Udderzoek's case, *supra*, § 918.

CHAPTER IX.

DEFECTS AND FAILURES OF VISION.

I. IMPORTANCE OF QUESTIONS INVOLVED.

Trustworthiness of witnesses dependent on accuracy of perception, § 924.
And so as to persons employed to distinguish goods and medicines, § 925.
And so as to persons employed to watch signals, § 926.
And so as to military observations, § 927.

II. DIFFERENT FORMS OF DEFECT.

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Color blindness, its nature and kinds, § 948.
Cause of, § 949.
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Remedies; examinations, § 952.
Substitutes for color, § 953.

§ 924. *Trustworthiness of witnesses dependent on accuracy of perception.*—The credibility of a witness depends both on accuracy of narration and on accuracy of perception; while accuracy of perception depends upon several conditions: (1) There must be the sense requisite to perceive. A blind man cannot testify as to an object only to

be perceived by sight; a deaf man cannot testify as to sounds which his deafness precluded him from hearing. A person alleged to have been intoxicated at the time of an occurrence which he undertakes to narrate as a witness may be impeached by showing such intoxication, which, if proved, will greatly affect his credibility. (2) There must be power of discrimination, and this depends in part on natural capacity, in part on experience. A person who is color-blind, as we shall have hereafter occasion to see, is not competent to speak as to colors; a person who is not experienced in shades of color could not testify as to any particular shade, no matter how good his natural capacity might be. A short-sighted person walking on the beach of a desert island might not be able to see the print of a man's shoe on the beach; a savage might not know what the print means. (3) There must also be concentration on the particular object testified to. Without such concentration sight would be comparatively valueless. The officers of a blockading cruiser, for instance, are far more likely to see and gather the meaning of a speck on the horizon if they are searching for blockade-runners than they would be if simply gazing listlessly on the expanse of the sea.¹

§ 925. *And so as to persons undertaking to distinguish goods and medicines.*—In the selection and purchase of goods the same qualities are required, though here touch may be called in to aid sight. The question, so far as litigation is concerned, may come up in two ways. (1) In cases of agency, as where A. employs B. to select goods of a particular color or quality. (2) In cases of sale where A. undertakes to sell to B. goods of a particular color or quality. In either case there is an assumption that the party undertaking to distinguish color or quality is competent to do so, and liability is imposed in case of failure to perform the task undertaken. The same liability is imposed on a party undertaking to select medicines. A druggist, for instance, who mistakes the labels or other marks of bottles with which he deals, is liable both criminally and civilly for the injury which he thereby inflicts on a customer.²

§ 926. *And so as to persons employed to watch signals.*—The most important line of litigated cases in which the question of visual accuracy comes up are those which concern the right perception of

¹ See as to authorities in relation to constituents of credibility of witnesses, Wh. on Ev., §§ 401 *et seq.*

² See *supra*, §§ 750 *et seq.*

signals. Signals marked with certain colors are used necessarily on railroads to indicate to persons employed on a road the approach of danger or to indicate when an essential duty is to be performed; and it is only by signals that information can be communicated to vessels at sea not within hailing distance. The buoy that floats on the water is a signal in this sense, and so are light-houses and light-ships. Hence it is that a person charged with a lookout for signals, whether on land or sea, must have the faculty of accurate perception, and must apply this faculty to the concrete case. The lookout on a ship at sea, for instance, is required to have a vision of the sharpness usual with good seamen so employed; the officers must have such telescopes as are, under all the circumstances of the case, proper for the purpose. The competency must go not only to form, but to color, as will be hereafter more fully seen.¹

§ 927. *And so as to military observations.*—In the management of military and naval combats accuracy of vision is pre-eminently essential, and is the basis on which all strategy rests. The cases are numerous in which mistakes by scouts as to the forces which they observed have led to momentous consequences; and the campaigns, in particular, in Virginia, during the late civil war, were marked by a series of disasters brought about by mistakes of this class. Napoleon maintained that he lost the battle of Waterloo from mistakes made by his scouts as to Grouchy's position; the blunders of Lord Cornwallis's scouts led to the shrinking of his forces which required their concentration and final surrender at Yorktown; the history of the siege of Sebastopol is in a large measure a record of the effect of devices of one belligerent to impose on the perceptions of the other. And in the management of blockades, as we will hereafter see more fully, the success of the blockader, on the one side, and of the blockade-runner on the other, depends primarily upon the sense of sight.

II. DIFFERENT FORMS OF DEFECT.

§ 928. *Vision varies with conditions of space.*—Three conditions intervene which modify vision in its relations to space: 1st. The limitation of the eye itself; 2d. The greater or less opacity of the atmosphere, and its susceptibility to refraction; 3d. The shape of the earth. The first two of these conditions will be separately considered. The limitations imposed by the shape of the earth are given in the following

¹ *Infra*, § 948.

table taken from Carr's Synopsis of Practical Philosophy as published in Tidd's Legal Medicine, p. 242.

Table showing the distance in miles of the farthest visible point that can be seen from the top of a given height, taking in account the effects of refraction.

| Height in feet. | Distance in miles. |
|-----------------|--------------------|-----------------|--------------------|-----------------|--------------------|-----------------|--------------------|
| 5 | 2.96 | 60 | 10.25 | 500 | 29.5 | 5,000 | 94.0 |
| 10 | 4.18 | 70 | 11.1 | 700 | 30.5 | 6,000 | 102.0 |
| 15 | 5.12 | 100 | 13.2 | 1,000 | 41.8 | 7,000 | 110.0 |
| 20 | 5.91 | 150 | 16.2 | 1,500 | 51.0 | 8,000 | 118.0 |
| 25 | 6.61 | 200 | 18.7 | 2,000 | 59.0 | 9,000 | 125.0 |
| 30 | 7.25 | 250 | 20.9 | 2,500 | 66.0 | 10,000 | 132.0 |
| 40 | 8.37 | 300 | 22.9 | 3,000 | 72.0 | 15,000 | 162.0 |
| 50 | 9.35 | 400 | 26.4 | 4,000 | 83.0 | 20,000 | 187.0 |

"It follows from this," says Dr. Tidy, "that a man of ordinary height can be seen on level ground at a distance of about three and a half miles on a clear day." This table, however, assumes a clear day without anything to disturb the vision. Right perception, as will be seen more fully hereafter, depends on the nature of the light and hence on the period of the day. It may depend, also, on the length or shortness of the time the observer has in which to view the object, also on the freedom of his view from all obstruction at the time, from whatever cause, or however momentary. The sun shining full in the face of a person may very much obstruct his sight. And the same effect may be produced by falling snow, or dense rain, or smoke.¹

"I was somewhat struck when I saw one of my countrymen making his way across the wilderness. At first, there was a mere moving speck in the horizon; soon it appeared that three laden camels were approaching, and that two of them carried riders; in a little while we saw that one of the riders wore the European dress; and at last the travellers were pronounced to be an English gentleman and his servant."²

§ 929. *Size must be appreciable.*—"With respect to the smallest objects recognisable by the unassisted sight, there has been much difference of opinion. Carpenter states (apparently on the authority

¹ Ram on Facts, 3d Am. ed. 25.

² Eothén, ch. xvii., quoted Ram on Facts, 3d Am. ed. 34.

of Ehrenberg) that the smallest square magnitude, black or white, which can be seen on a ground of the reverse color, is about the $\frac{4}{15}$ th to the $\frac{1}{40}$ th of an inch, whilst particles that powerfully reflect light, such as gold dust, of the $\frac{1}{125}$ th of an inch, can be seen with the naked eye in common daylight. Bergmann found that black and white chequers of $\frac{1}{5}$ th of an inch square could be discerned at such a distance that the retinal image of each square could not have exceeded half the diameter of one of the cones of the bacillary layer, which are said to have a diameter of $\frac{1}{165}$ th of an inch. Dr. Vincent de Guéret (of Creuse) in La France Medicale, No. 57, for 1875, states that objects to be seen at all must have a diameter of the $\frac{1}{250}$ th of an inch. *Lines* are more easily perceived than *points*. Thus opaque threads of the $\frac{1}{50}$ th of an inch (*i. e.*, about half the diameter of a silk worm's fibre) can be discerned by most people with the naked eye when held towards the light.¹ Volkmann considered that parallel black lines could be seen when only the $\frac{1}{100}$ th of a millemetre apart ($\frac{1}{250}$ th of an inch).²

§ 930. *Must be susceptibility of differentiation.*—The thing observed may in itself be deficient in marks by which its character can be guessed. Thus Captain Parker, in his narrative of the encounter between the Merrimac and the Monitor, tells us that the Monitor, to the distant observer, "looked like a cheese-box."³ Afterwards, speaking of the attack of confederate boats on the blockaders in Charleston harbor, he tells us that the "boats were ordered to come off singly or in pairs, so as not to attract attention."⁴

Dr. Shippen, in his "Naval Battles,"⁵ thus describes the arrival of the Monitor: "Passing up the James river channel again, the Merrimac opened fire upon the Minnesota, with her bow guns, hailing her once or twice, when, suddenly there darted out from under the shadows of the huge frigate, a little raft-like vessel, almost flush with the water, and bearing on her deck a round, black turret. At first no one in the camp (where Dr. Shippen was) seemed to know what it was or how it came there, but at last it was conceded that it must be the strange new iron-clad which was said to be building in New York by Ericsson."

"A Federal officer in the battle of West Point, Virginia, May

¹ Quoted in "Funke's Lehrbuch d. Physiologie."

² Tidy Leg. Med. 248.

³ Parker's Recollections, p. 165.

⁴ Ibid. 313.

⁵ P. 576.

1862, rode but a few yards into the woods before he came in sight of the men he had heard; * * * but one and all were clad not in the dusky blue he had expected to see, but in unmistakable gray. * * * He had no sooner perceived the state of affairs than he decided how to act. Saluting them with due gravity, yet with a certain non-chalance, as if it were simply a compliment that one soldier in the C. S. A. should pay to his comrades, he had not time to speak before he was asked, ‘How far off is Gen. Hampton, sir, do you know?’ ”¹

“A person viewing an object approaching from a great distance gradually discovers the form and nature of it.”²

“Far on the horizon’s verge appears a speck,
A spot—a mast—a sail—an armed deck.”

The following vivid narrative is from Professor Soley’s “Blockade and the Cruisers” (1883) 156, *et seq.* :—

“The trade was now reduced to a system, whose working showed it to be nearly perfect. The short-voyage blockade-runners, destined for the passage between the neutral islands and the blockaded coast, began to make their appearance. In these every device was brought into use that could increase their efficiency. Speed, invisibility and handiness, with a certain space for stowage, were the essentials; to these all other qualities were sacrificed. *The typical blockade-runner of 1863–4, was a long, low sidewheel steamer, of from four to six hundred tons, with a slight frame, sharp and narrow, its length, perhaps, nine times its beam. It had feathering paddles, and one or two raking telescopic funnels, which might be lowered close to the deck. The hull was only a few feet out of the water, and was painted a dull gray or lead color, so that it could hardly be seen by daylight at two hundred yards. Its spars were two short lower masts, with no yards, and only a small crow’s-nest in the foremast. The deck forward was constructed in the form known as ‘turtle-back,’ to enable the vessel to go through a heavy sea. Anthracite coal, which made no smoke, was burned in the furnaces.* This coal came from the United States, and when, in consequence of the prohibition upon its exportation enforced by the government, it could not be obtained, the semi-bituminous Welsh coal was used as a substitute. When running in, all lights were put out, the binnacle and fire-room

¹ Kelsey’s Deeds of Daring in the Civil War 135.

² Ram on Facts, 3d Am. ed. 34.

hatch were carefully covered, and steam blown off under water. In the latest vessels of this class speed was too much studied at the expense of strength, and some of them were disabled before they reached their cruising-ground. The start from Nassau or Bermuda was usually made at such a time that a moonless night and a high tide could be secured for running in. A sharp lookout was kept for cruisers in the outside blockade, and the blockade-runner, by keeping at a distance, could generally pass them unobserved. If, by accident or carelessness, he came very close, he took to his heels, and his speed enabled him to get away. He never hove to when ordered; it was as hard to hit him as to overtake him; a stray shot or two he cared nothing for. Even if his pursuer had the advantage of him in speed, which was rarely the case, he still kept on, and by protracting the chase for a few hours, he would be sure that a squall or a fog, or the approach of night, would enable him to escape. Wilkinson describes a device which was commonly employed under these circumstances. In running from Wilmington to Nassau, on one occasion, he found himself hard pressed by a sloop-of-war. His coal was bad, but by using cotton saturated with turpentine, he succeeded in keeping ahead. The chase had lasted all day, and at sunset the sloop was within four miles, and still gaining. The engineer was then directed to make a black smoke, and a lookout was stationed with a glass to give notice as soon as he lost sight of the pursuer in the deepening twilight. The moment the word came, orders were given to close the dampers, and the volumes of smoke ceased to pour out; the helm was put hard-a-starboard, changing the course eight points; and the blockade-runner disappeared in the darkness, while the cruiser continued her course in pursuit of a shadow. Having passed the outside blockade successfully, and arrived in the neighborhood of his destination, the blockade-runner will either lie off at a distance, or run in close to the land to the northward or southward of the port, and wait for the darkness. Sometimes vessels would remain in this way unobserved for a whole day. If they found the place too hot and the cruiser too active, one of the inlets at a little distance from the port of destination would give the needful shelter. Masonboro Inlet, to the north of Wilmington, was a favorite resort for this purpose. At night the steamers would come out of hiding and make a dash for the entrance. The difficulty of running blockade was increased by the absence of lights on the coast. In approaching or skirting the shore,

the salt works in operation at various points served as a partial substitute. Temporary lights were used at some ports to aid the blockade-runners. At Charleston, there was a light at Fort Sumter. At Wilmington, the first year, the Frying Pan lightship was taken inside the entrance and anchored under Fort Caswell, where she was burnt in December 1861, by two boat's crews from the Mount Vernon. At New Inlet, a light was placed on 'the Mound,' a small battery flanking the works on Federal Point. In the earlier blockade, the lights of the squadron served as a guide to blockade-runners. After the general practice was discontinued, the plan was adopted of carrying a light on the senior officer's vessel, which was anchored in the centre of the fleet, near the entrance. This fact soon became known to the blockade-runners; indeed, there was little about the squadron that was not known and immediately disseminated at Nassau, that central-office of blockade-running intelligence. Thenceforth it served as a useful guide in making the channel. After a time the blockading officer discovered his error, and turned it to account by changing his position every night, thereby confusing many calculations. The run past the inshore squadron was always a critical moment, though by no means so dangerous as it looked. It was no easy matter on a dark night to hit, much less to stop, a small obscure vessel, going at the rate of fifteen knots, whose only object was to pass by. But the service nevertheless called into action all the faculties of the blockade-runner. It required a cool head, strong nerve, and ready resource. It was a combat of skill and pluck against force and vigilance. The excitement of fighting was wanting, as the blockade-runner must make no resistance; nor, as a rule, was he prepared to make any. But the chances both outside and inshore, were all in his favor. He only had to make a port and run in, and he could choose time, and weather, and circumstances. He could even choose his destination. He always had steam up when it was wanted. He knew the critical moment, and was prepared for it; and his moments of action were followed by intervals of repose and relaxation. The blockader, on the other hand, was in every way at a disadvantage. He had no objective point except the blockade-runner, and he never knew when the blockade-runner was coming. He could choose nothing, but must take the circumstances as they happened to come; and they were pretty sure to be unfavorable. He was compelled to remain in that worst of all situations, incessant watchfulness combined with prolonged inaction. There

would be days and nights of anxious waiting, with expectation strained to the tensest point, for an emergency which lasted only as many minutes, and which came when it was least expected. There was no telling when or where the blow need to be struck; and a solitary moment of napping might be fatal, in spite of ceaseless vigilance."

In a sketch of a journey "Across the Plains," in Longman's Magazine for July 1883, p. 301, we have the following:—

"We were at sea—there is no other adequate expression—on the plains of Nebraska. I made my observatory on the top of a fruit wagon, and sat by the hour upon that perch to spy about me, and to spy in vain for something new. It was a world almost without a feature; an empty sky, an empty earth; front and back, the line of railway stretched from horizon to horizon, like a cue across a billiard-board; on either hand, the green plain ran till it touched the skirts of heaven. Along the track innumerable wild sunflowers, no bigger than a crownpiece, bloomed in a continuous flower bed; grazing beasts were seen upon the prairie at all degrees of distance and diminution; and now and again we might perceive a few dots beside the railroad which grew more and more distinct as we drew nearer till they turned into wooden cabins, and then dwindled and dwindled in our wake until they melted into their surroundings, and we were once more alone upon the billiard-board. The train toiled over this infinity like a snail; and being the one thing moving, it was wonderful what huge proportions it began to assume in our regard. It seemed miles in length, and either end of it within but a step of the horizon."

Mr. Cox, in the sixth chapter of the second volume of his book on the Mechanism of Man, writes:

"My sitting window looks upon a field. At the house of a friend, something was said about a large tree in that field visible from the window. I confidently asserted that there was no such tree, and two of my family present supported me. My friend had been but once in the room, but he was equally positive as to his impression. On looking from the window we found that we, who had been viewing that very tree for twenty years, were wrong, and my friend, who had looked upon it for five minutes only, was right." The converse of this is to be found in the cases in which some startling object arrests the eye and absorbs the attention. It is related of a great painter, that annoyed at discovering that a showy picture had been hung next to a sea piece of his own which was in subdued colors, he painted in

brilliant vermillion a buoy at the corner of his canvass. This restored the equilibrium, if it did not throw the rival picture into shade.

“ Completeness and accuracy of observation may be said to depend upon the following considerations : first, the quality of the occurrence or fact observed, to attract and fix attention ; secondly, the length of time during which it remains before the senses of the observer ; thirdly, the situation of the observer himself, in regard to time, leisure, and opportunity of observation ; and, fourthly, the character of the observer, as possessing in a greater or less degree, the faculty of observation, and the disposition to exercise it. Hence it is possible that a circumstance of the most commonplace and unimpressive character, may, from some peculiarity accidentally attending it, or having its seat in the observer himself, become the subject of as minute and accurate observation as if it had actually worn a criminal or suspicious aspect.”¹

§ 931. *Fixity of object viewed.*—“ There may be a persistence of visual impressions excluding for a time subsequent perception. Thus if a bright object be presented to the eye, and then suddenly obscured, the impression of light remains upon the retina for a short interval of time after the luminosity has actually disappeared ; and if the luminous body be again restored to its position before this interval has elapsed, we fail to see that it has disappeared at all. * * * A lighted stick, revolving with rapidity, presents the appearance of luminous circles ; and the successive sparks thrown off from a knife grinder’s wheel produce the impression of a continuous stream of fire.”² An acute observer is attracted by any motion, no matter how slight.

“ Things in motion sooner catch the eye
Than what not stirs.”³

Thus “the shining of the eye” of a person lying in concealment is apt suddenly to betray him :

“ Bertram suspends his purpose stern,
And couches in the brake and fern,
Hiding his face, lest foeman spy
The sparkle of his swarthy eye.”⁴

To these lines Sir W. Scott adds this note : “ After one of the recent battles in which the Irish rebels were defeated, one of their

¹ Burrill Circ. Ev. 103.

² Ency. Amer., tit. Vision.

³ Troilus and Cress., a. iii., s. 3.

⁴ Rokeby, canto iii.

most active leaders was found in a bog in which he was immersed up to the shoulders, while his head was concealed by an impending ledge of turf. Being detected and seized, notwithstanding his precaution, he became solicitous to know how his retreat had been discovered. ‘I caught,’ answered the Sutherland Highlander, by whom he was taken, ‘the sparkle of your eye.’ Those who are accustomed to mark hares upon their form, usually discover them by the same circumstance.”¹

Under this head may be noticed the discrepancies which are observable in narratives of battles, of riots and of incidents in which there was a rapid movement of persons.²

“‘I remember a mass of things, but nothing distinctly; a quarrel, but nothing wherefore,’³ was the state of Cassio’s recollection, so soon as he recovered from his drunkennesss, in which he had quarrelled and fought with Montano. So, in the case of a riot or tumult, especially if sudden, it naturally happens that the minds of many, perhaps of most, persons present are very much confused, and observe nothing distinctly. Their minds are rapidly withdrawn from one object to another, so that they observe the scene rather in one mixed and indistinct mass, than in separate defined portions. They look here and there, on this side and that; in turn see different parts of what is going on; and there is very little that, separately from the mass, makes much impression on their minds.”⁴

“This morning of St. Bartholomew, the Duke had received letters in which he was advertised that Rochelle had relieved itself; upon which he directed that his breakfast might speedily be made ready, and he would make haste to acquaint the king with the good news. The chamber, wherein he was dressing himself, was full of company, of persons of quality and officers of the fleet and army. * * * He being ready, and informed that his breakfast was ready, drew towards the door, where the hangings were held up; and in that very passage, turning himself to speak with Sir Thomas Fryar, a colonel of the army, who was then speaking near his ear, he was on the sudden struck over his shoulder upon the breast with a knife; upon which he

¹ Men take woodcock by their eyes.—*Hudibras* Cited Ram on Facts, 3d Am. ed. 29.

² See illustrations on testimony in Philadelphia Riot Cases of 1844, reported in Appendix to Wh. on Hom.

³ Othello, art. 2, § 3.

⁴ Ram on Facts, 3d Am. ed. 32.

fell down dead, the knife having pierced his heart. No man had seen the blow, or the man who gave it.”¹

“ In all nature there is not an object so essentially at war with the stiffening of a frost as the headlong and desperate life of a cataract, and yet notoriously the effect of distance is to lock up this frenzy of motion into the most terrific column of stillness. This effort is perceived at once when pointed out, but how few are the eyes that would ever have perceived it for themselves.”²

§ 932. *Human identification depends on a continuation of peculiarities.*—As has been already seen, the identification of human beings depends upon the recognition of a multitude of peculiarities many of them undefinable.³

“ The countenances of two persons will be much alike when their faces possess similar features and peculiarities, because countenance is the effect of features and peculiarities. Several persons may think the countenances alike; and, if they do, it will be because each has a similar impression of each countenance. But it often happens that two countenances are thought to be alike by one person, but not by another, both seeing them at the same time; the one instantly sees the likeness, the other cannot see any likeness at all. This difference must arise from the different impressions which the countenances make; and the impressions will be different, if both persons have not similar perceptions of the features and peculiarities of the two faces. If the two faces are not seen at the same time, the different opinions as to the resemblance of countenance may arise from the countenances being really unlike each other at different times, one or both of them having in the interim experienced a change.

“ The likeness of one person to another may cause very great, and most inconvenient, and even fatal mistakes.

“ Antipholus of Syracuse, the twin brother of Antipholus of Ephesus, experienced some of these inconveniences :

“ ‘There’s not a man I meet, but doth salute me
As if I were their well-acquainted friend ;
And every one doth call me by my name.
Some tender money to me, some invite me ;
Some other give me thanks for kindnesses ;

¹ Clarendon’s History of the Rebellion, vol. i., p. 28, ed. 1707.

² De Quincey, Sketch of Wordsworth, p. 260.

³ *Supra*, §§ 620 *et seq.*

Some offer me commodities to buy ;
Even now a tailor call'd me in his shop,
And showed me silks that he had bought for me,
And therewithal, took measure of my body.''¹

"The following is a remarkable evidence of resemblance between two sisters : In November 1794, a woman was indicted at the Old Bailey for robbing her ready furnished lodgings. The prosecutrix swore to the prisoner's having taken the lodgings. The prisoner said she had a twin sister, so like her that their parents could not distinguish them asunder. A man said the sister was in custody for a similar offence ; he had seen her, and they were so alike, it was impossible to perceive any difference. Under these circumstances, the jury acquitted the prisoner. She was a second time indicted for a similar offence. The prosecutrix, in this case, was positive as to her identity. She had seen the sister, who, in order to deceive her, had changed clothes with her sister, but still she pointed her out. She also distinguished their voices, and a degree of hastiness in the sister beyond the prisoner. On this second indictment she was found guilty."²

"The recognition of individuals depends on various points. The features, the color and arrangement of the hair, prognathism, the color of the eyes, etc., in the case of people comparatively near, are the important means of identification ; whilst beyond a certain distance, stature, gait and general peculiarities, such as unusual actions, etc., are no doubt the primary means by which we know one person from another. Naturally, therefore, the more the peculiarities of the individual, the more easily he may be recognised at a distance. From experiments on recognition, Guirét concludes that the best known persons, even those possessing well-marked personal peculiarities can only be recognised, and that with difficulty in broad daylight at a distance of 100 metres (a little over 109 yards). Beyond 150 metres (164 yards) he believes recognition to be perfectly impossible. Less known and less remarkable people can only be recognised in broad daylight at a distance of from 60 to 100 metres (65 to 109 yards). In the case of people who have no personal peculiarities, and are almost strangers, he regards 25 to 30 metres (27 to 33 yards) as about the limitation of recognition."³

¹ Comedy of Errors, A. iv., sc. 3, and see Ibid. A. v., sc. 1.

² New Annual Register for 1794.

³ Tidy Leg. Med. 246.

"The impression taken once or twice only of a person's voice, gait, or carriage, may sometimes be but of little value for the purpose of identifying him. The voice may not have been in its proper and usual tone, but in one accidental, arising from some passion, as fear or anger; or from bodily ailment, as a cold, or in a tone in imitation of another's voice, or otherwise disguising its own proper and usual tone. So the gait or carriage may not have been the person's usual gait or carriage, but one caused by temporary lameness, or other bodily indisposition, or assumed for the very purpose of disguise.

"When persons have been in the habit of seeing another very often, they may be able to recognise him, although in disguise, and even under circumstances of sudden noise and confusion, striking terror into their minds.

"Rush, the murderer of Mr. Jermy and his son, had a particular way of carrying his shoulders, and he used to keep his head a little on one side. From these peculiarities, and his height, size, and gait, he with his face covered, and otherwise in disguise, was, at the time of the murders in Stanfield Hall, recognised by four persons, in the midst of repeated discharges of fire-arms, and the shrieks, wounds, and death thereby occasioned."¹

§ 933. *Modifying effect of dress.*—The effect of dress in determining questions of identity has been already discussed.² It should be kept in mind, however, that "identification ought mainly to rest on the remembrance of the person, independently of the dress, for the dress of which the impression was taken, may have many likenesses; as for instance, soldiers' uniforms, laborers' frocks; and the dress supposed to be the one remembered, and used to identify it, may be one of those likenesses; and in proportion to their number will be the danger of mistaken identity of person. And besides, admitting the dress to be rightly identified, it does not follow that the person who wore it, when the impression of it was taken, is the man who owns and now wears it, and whose identity is in question;" and numerous cases are reported in which articles of dress were borrowed and by one of these or some other means, have clothed another person, when the impression of the dress was taken.³

¹ Ram on Facts, 3d Am. ed., 84, citing *The (London) Times*, March 30, and April 5, 1849.

² *Supra*, § 620, *et seq.* 633.

³ Ram on Facts, 3d Am. ed. 88. See *Burrill Circ. Ev.* 639.

"A man," says Mr. Ram,¹ "met on an unfrequented path attracts attention; while if encountered on a high-road, he might pass unregarded. An unusual gait, manner, or dress of a person excites notice. An unusual sight or sound may be deeply impressed on the mind; as the sight of a wounded man or a shriek of alarm. If a pistol, knife, or other formidable weapon, is seen in the hand of a man, in a place, or at a time, which does not sort with his armed appearance, attention is drawn to him."

"Upon that night (a peasant's is the tale)
 A serf that crossed the intervening vale,
 When Cynthia's light almost gave way to morn,
 And nearly veil'd in mist her waning horn;
 A serf, that rose betimes to tread the wood,
 And hew the bough that bought his children's food,
 Pass'd by the river that divides the plain
 Of Otho's lands and Lara's broad domain;
 He heard a tramp—a horse and horseman broke
 From out the wood—before him was a cloak
 Wrapt round some burthen at his saddle-bow,
 Bent was his head, and hidden was his brow.
 Roused by the sudden sight at such a time,
 And some foreboding that it might be crime,
 Himself, unheeded, watched the stranger's course."²

§ 934. *Existence of unexpected changes.*—We shall hereafter³ have occasion to notice how far the imagination may be concerned in producing an illusion of an unreality. We have now to observe that any variation from what we expect awakens attention.

When we see a friend, who from any cause has become altered in his appearance since we saw him last, this change is likely to make a deep impression on the mind. Lord Malmesbury, in his diary, thus mentions the impression made on him by Mr. Pitt's altered appearance the last time we saw him :

"On 3d November [1805] he and Lord Mulgrave came to me in Spring Gardens with a Dutch newspaper, in which the capitulation of Ulm was inserted at full length. As they neither of them understood Dutch, they came to me to translate it, which I did as well as I could; and I observed but too clearly the effect it had on Pitt, though

¹ Opt. cit. 42.

² Lara, canto ii., st. 24.

³ *Infra*, §§ 943–4.

he did his utmost to conceal it. *This was the last time I saw him.* He promised me to come for a few days to Park Place, on his return from Bath, where he was then going, but was too ill to keep his word. This visit has left an *indelible impression* on my mind, as his manner and look were not *his own*, and gave me, in spite of myself, a foreboding of the loss with which we were threatened.' ”¹

§ 935. *Moonlight and starlight*.—According to Dr. Tidy,² the best known person cannot be recognised by the clearest moonlight at a greater distance than 15 to 16 metres (16 to 17 yards). The light of the moon, however, is very variable, whilst on a bright night the shadows produced are often intense, well-defined, and lengthy. It is maintained also that by starlight only, the best known person cannot be identified further off than 3 to 4 metres (10 to 13 feet).

§ 936. *Flash of lightning*.—Those who have had occasion to travel in a dark night in a storm have noticed how effectual a flash of lightning has been in pointing out a road; and no one who has ever watched the ocean in a storm at night but must have been struck with the vividness with which it presents sails even on the edge of the horizon. Dr. Montgomery, in his Cycloœdia of Practical Medicine, tells us that the light emitted from a flash of lightning is said to have sufficed to enable a lady, on her passage home from India, to see distinctly, and afterwards identify, a man robbing her trunk in the

¹ Malmesbury Diary, iv., 340, cited Ram on Facts, 3d Am. ed. 44.

“It costs me not much difficulty to suppose that my friends who were already grown old when I saw them last are old still; but it costs me a good deal sometimes to think of those who were at that time young as being older than they were. Not having been an eye-witness to the change that time has made in them, and my former idea of them not being corrected by observation, it remains the same; my memory presents me with this image unimpaired; and while it retains the resemblance of what they were, forgets that by this time the picture may have lost much of its likeness, through the alteration that succeeding years have made in the original.” Cowper’s Works, Letters, iv., p. 41.

“If two persons, each between sixty and seventy years of age, were, forty years ago, almost daily together and intimate friends, but during those forty years have never met, and at the end of that time they happen to meet, a great probability is they will not at all recognise each other; and if each is convinced of the other’s identity, it will not be by their sight, but by their conversation, bringing to each other’s mind events or circumstances which took place antecedent to the forty years, and of which each has a remembrance.” Ram on Facts, 3d Am. ed. 81.

² Leg. Med. 246.

cabin of a vessel on a dark night. Dr. Tidy tells us that he has experimented many times on this point, and entirely agrees that a flash of lightning is in many cases, but by no means in all, amply sufficient for purposes of identification. Thus, he was able on one occasion to detect a black hair pin on the ground by a flash of lightning and to pick it up when the next flash came.¹

§ 937. *Refraction to be considered.*—In the observation of distant objects it must be remembered that in many conditions of the atmosphere there is a deviation from a rectilinear course of light traversing the atmosphere by which bodies not in the zenith are apparently displaced and elevated above their true place.

“In 1882, Captain Scoresby recognised the ship *Fame* by her inverted image in the air, though she was seventeen minutes below the horizon. The whole of Dover Castle has been seen as if lifted over an intervening gulf by refraction of the rays of light from its surface, and in this case the image from the looming was so vivid as to obscure the hill which really lay between the castle and the observer’s eye. * * * Two boats, one real, the other a reflection, have been seen side by side upon the Lake of Geneva at the same moment.”²

“The celebrated *Fata Morgana*,” says Sir David Brewster, in his treatise on Optics, “which is seen in the Straits of Messina, and which for centuries astonished the vulgar and perplexed philosophers, is obviously a phenomenon of this kind. A spectator on an eminence in the city of Reggio, with his back to the sun and his face to the sea, and when the rising sun shines from that point whence its incident ray forms an angle of about 45° on the Sea of Reggio, sees upon the water numberless series of pilasters, arches, castles well delineated, regular columns, lofty towers, superb palaces with balconies and windows, villages and trees, plains with herds and flocks, armies of men on foot and horseback, all passing rapidly in succession on the surface of the sea. These same objects are, in particular states of the atmosphere, seen in the air, though less vividly; and when the air is hazy, they are seen on the surface of the sea, vividly colored, or fringed with all the prismatic colors.” A great deal of the artistic details of these phenomena is due to the idealizing powers of the observer, just as persons looking for some time intently at the live

¹ Leg. Med., *ut supra*.

² Johnson’s Cyclopaedia, 1877.

coals of a wood fire that has burned down, are able to see in them numberless forms of buildings, of trees, and of human figures. But that under the influence of the mirage the scenery of the shore is reflected on the sky, and is there seen at the distance of forty or fifty miles, is verified by common experience. In certain rare conditions of the atmosphere this is the case on the shores of Narragansett Bay, and still more frequently on the shores of Lake Superior.

Of phenomena of the same class in the Arctic regions, Captain DeLong, in his singularly interesting diary, thus writes: "At eight p. m. the moon was rising on the southern horizon, and very much distorted by refraction. It seemed of immense size four days before full moon, and reminded one of a large city burning. Auroral flashes shot up from the eastern horizon towards the zenith, and, with the many stars visible, made a beautiful scene. * * * The changes were vivid and instantaneous, and had we been in open water I should have declared that the occurrence was due to signal lights from a ship. But alas! open water, if any such thing exists, must be many miles to the south of us."¹

"The refraction is something wonderful. The shapes of distant pieces of ice change very often apparently, and small lumps look inordinately large. Occasionally we sight some enormous blocks which have broken off and up-ended in the ice pressures. To survey these massive pieces more satisfactorily we plod through the broken hummocks towards them, only to find upon arrival that a very insignificant block has been magnified by refraction. A piece seemingly forty feet in height becomes in reality ten feet."²

The apparent exhibition on the upper disc of the horizon of ships or of shore arises from the existence of vapors which act as mirrors, this condition being often generated by the difference of temperature between air and water. The phenomena, therefore, are more common in misty mornings in summer or fall. The water retaining its heat during the night more perfectly than the air, the layer of air over it is warmer than the superincumbent layer. For this reason the refracted images on the layer resting on the horizon are seen best by persons on the level of the water, and are not observable at a height of thirty feet above that level. The reflection is of different kinds. Sometimes the image is inverted; sometimes it is seen by

¹ Voyage of the Jeannette, II., 449.

² Id. I., 266.

halves; sometimes it emerges only in part from above the disc of the horizon. But just as glass varies, as the concave or convex element predominates, or reflects, when it assumes the shape in which it pours out from the furnace, distorted forms, so it is with these mirrors of the skies. In this way may be explained the Fata Morgana, and the extraordinary mirages which have been already incidentally noticed.

In an article in the London Cornhill Magazine for August 1883, it is stated that the occupants of a solitary telegraph office on the Red Sea "used to see for fifty minutes at a time, and repeatedly from day to day, a mirage of the same remarkable building, 'an ancient building of great size, castellated, with a broad terrace before its massive gateway.' Wahabees were seen walking in numbers along the terrace, so that the observer felt sure that, wherever the castle might be, it was a centre of Wahabee revolt. By copying the scene as it appeared in the mirage, and inquiring of travellers, one of the telegraph clerks at length learnt where the castle was situated, and found out that it was, as he had conjectured from the character of the constantly recurring vision, one of the secret centres of Wahabee conspiracy. It is represented that not the castle only, but the particular persons frequenting the castle, could be seen so clearly in this magic mirror provided by the strange conditions of the atmosphere, as to be recognised and rendered quite familiar to the inhabitants of this little lonely telegraph post on the Red Sea, distant, apparently, some hundreds of miles away." On this the London Spectator of August 4, 1883, comments as follows: "Whether the phenomena of the mirage are really so vivid as this, that you can see the images of what happens at so great a distance as if it were close at hand, we do not profess to know, though the writer of this paper evidently means so to represent it. We should have thought that would have been possible only if the atmosphere could furnish telescopic apparatus to magnify the reflected image, as well as reflecting surfaces by the aid of which to alter and falsify its apparent locality. But be this as it may, there seems to be no doubt that in special localities the desert does present lively pictures of all sorts of distant scenes, sometimes curiously blended together, and sometimes topsy-turvy. Caravans which are not within some scores of miles of the place, will apparently pass through it, sometimes in regular order, sometimes with both men and camels marching on their heads. Ships-of-war—probably on the Red Sea—will appear to sail through the

desert, side by side with these caravans, so that the mirage grotesquely collects together, like the sheet on which a magic-lantern is displayed, the most ill-assorted collection of images from the real world, and unites them in places where they are quite inconsistent with each other." To this the writer in the *Spectator* adds the following interesting suggestions: "Now, it has struck us, in reading the account of some very curious experiments just issued by the 'Society for Psychical Research,' that there is a curious analogy between the physical phenomena of mirage as seen in the Desert, and the mental phenomena of what the Society calls 'thought-transference.' In the former case, we suppose, the reflection is the result of well-known physical laws; in the latter case, the reflection which appears to take place between mind and mind is the result of very imperfectly known mental laws; but none the less, there is a frequent illustration of that curious inversion of topsy-turvyness in the image which seems to be so often observed in the physical reflection of the mirage, and which in that case is, of course, a very ordinary consequence of the same law which makes the left side of the face in a plain mirror appear to be the right side, and the right side appear as the left."

§ 938. *Artificial light.*—The question how far artificial light enables accurate observation to be taken depends upon the constancy and power of the light. On the one hand a government lighthouse is considered so trustworthy that the light displayed by it is treated in courts of justice as determining the position of the point it illuminates and the bearing of objects on the sea. On the other hand lights under the control of private persons possess no such quality as proof. Whether, in any case, artificial light is sufficient for identification depends on the particular case.¹

In Lord Lovat's Memoirs, narrative is given of an attack made by him on the forces of Lord Athol, the latter being lighted by their camp fires. "If Lord Lovat at this moment had had his whole force with him, the enemy might have all been cut to pieces, without the expense of ten men. He could observe their slightest movement by the light of their fires; and they were unable to perceive Lord Lovat

¹ See as to effect of light from shore in enabling a vessel to be tracked, Ammen's *Atlantic Coast (Navy and the Civil War)* 211; Soley's *Blockade and the Cruisers* 101, 161, 162. Prof. Soley, p. 108, speaks of the detection of a blockade-runner "by seeing her two masts cut off the light on Sumter."

or any of his men at a distance of twenty paces."¹ And the cases of identification by artificial light are very numerous. One of the most interesting, so far as concerns the variation of light and shadow in the box of a theatre at a moment of great consternation and excitement, is detailed in the trial of Surratt for the murder of President Lincoln.

The question whether an object at which we look is in motion or not is affected by the degree of permanency of the light in which we view it. Thus "if a darkened apartment, containing objects in rapid motion, as, for instance, revolving wheels, be suddenly illuminated by an electric spark of sufficient intensity, the wheels will be perceived, but will be seen as if at rest. The duration of the spark is so short that the spokes of the wheel do not move far enough in the interval of illumination to confuse each other's outlines on the retina; and yet the illuminated bodies are perceived with perfect distinctness."²

§ 939. *Flash of fire arms.*—How far there may be identification from the light from the flash of fire arms has been the subject of much discussion. "The question," says Dr. Taylor, "was raised in this country, in the case of Reg. *v.* White, at the Croydon Autumn Assizes, 1839. A gentleman was shot at while driving home in his gig during a dark night; he was wounded in the elbow. When he observed the flash of the gun, he saw that the piece was levelled towards him, and the light of the flash enabled him to recognise at once the features of the accused. In cross-examination he said he was quite sure he could see the prisoner, and that he was not mistaken as to his identity. The accused was skilfully defended, and he was acquitted. Evidence of this kind has, however, been received in an English court of law. A similar case was tried at the Lewes Lent Assizes, 1862, Reg. *v.* Stapley. The prisoner shot at the prosecutor, a gamekeeper, on a dark evening in December, and the latter swore that he distinctly saw the prisoner by the flash of the gun, and could identify him by the light on his features. His evidence was corroborated by three other witnesses, who saw him not far from the spot, and by one who saw him in the act of running away. He was convicted. A case is quoted by Paris and Fonblanche, *Rex v. Haines*, in which some police-officers were shot at by

¹ Lord Lovat's Memoirs, p. 84, cited Ram on Facts, 3d Am. ed. 267.

² Ency. Am., tit. Vision. See article by Prof. Rood in Am. Journ. of Science and Arts, Sept. 1871.

a highwayman during a dark night. One of the officers stated that he could distinctly see, from the flash of the pistol, that the robber rode a dark-brown horse of a remarkable shape in the head and shoulders, and that he had since identified the horse at a stable in London. He also perceived, by the same flash of light, that the person had on a rough brown great-coat. This evidence was considered to be satisfactory."¹ The question, in fact, is one dependent upon the witness' capacity of observation, of which the jury is to judge. Dr. Tidy² refers to the following case:

"In May 1808, the Sieur Labbé was riding, accompanied by the widow Beaujean, along the high road, one hour and forty-three minutes before the rising of the moon, when the servant of the former was wounded in the hand by a gun fired through a hedge. Both swore that they recognised the assassin by the light of the discharge. See Guy, p. 7, and Taylor's Med. Jur., i., p. 684. The accused, being sentenced to death on this evidence, appealed to the Court of Cassation, and many experiments were made by Guineau, Dupuis, Caussin and others, which seemed to negative this possibility. In their own words, 'The light was so fuliginous and so transient that it was scarcely possible to see distinctly the form of a head, and that of the face could not be recognised.' The sentence was reversed. Foderé afterwards contested this decision, and a subsequent case, confirmed by the experiments of Desgranges, of Lyons, showed the possibility of such recognition.

"M. Cauvet (Constantinople) who has lately investigated this point (Dec. 1873), concludes : 1. That recognition of a person firing is possible if the observer be within five paces of the discharge and at the side of the line of fire; or 2. If the discharge occurred in a close place of small dimensions, and the observer occupied a stooping posture. 3. Recognition is affected by the quality of the powder used, the best English powder being that from the explosion of which recognition is most certain. Our own experiments on this point lead us to believe in the possibility of recognition in the majority of cases, that is, given a moderate distance, a dark night, and the absence of any artificial light, and that the smoke produced by the explosion is not great. Given the reverse of these conditions, viz., a considerable distance, a weak flash and much smoke, and we are of opinion that

¹ Taylor, *ut supra*, 374.

² Tidy, *ut supra*.

the chances of identification would be doubtful. Dr. Taylor also agrees in the possibility of recognition under such circumstances."

§ 940. *Subjective peculiarities of vision—Age.*—We have heretofore been considering the objective side of vision. We have now to consider its subjective side. Dr. Tidy¹ gives the following estimate from Dr. DeGueret:

The acuteness of vision at 50 years is diminished 1-5.

| | | | | | | |
|---|---|---|----|---|---|------|
| " | " | " | 60 | " | " | 1-4. |
| " | " | " | 70 | " | " | 1-3. |
| " | " | " | 80 | " | " | 1-2. |

In other words, if a man of forty could distinguish and recognise an object at 100 feet distance, at sixty years of age he could not recognise the same object further off than 75 feet. Dr. Tidy adds, however, that it would be interesting to know precisely how these results were obtained, and whether care was taken to exclude all cases of incipient cataract.

§ 941. *Other abnormal conditions.*—Not only is the accuracy of a witness' observation open to be tested by the extent of his vision, but identification may take place by noting the way a book is held, and sometimes an act is done. "In case of hypermetropic, myopic and presbyopic persons, or of patients with other varieties of imperfect sight, lenses are needed, or allowance must be made.² The action of such persons, in habitually avoiding light, may enable them to be distinguished.

"The sunshine that offends the purblind sight,
Had some their wishes, it would soon be night."

Dr. Jeffries, in a paper published in 1884, on "Our Eyes and Our Industries," gives the following: "Defective schoolhouses from any cause produce myopia, and help increase it when naturally present or when the tendency to it exists from birth. As I have said, these facts have been finally admitted by the community, and those in authority are more amenable to suggestions concerning feasible means of controlling myopia. Parents, too, are beginning to realize that the absolutely necessary glasses for school children cost money, even disregarding any question of loss of vision, etc. The resistance of those whose gains or pockets are touched by the adoption of better planned schoolhouses and school furniture, as also of those who get the control of

¹ Op. Cit. 244-5.

² Tidy, *ut supra*, 242.

school book printing, etc., is too great to be at present overcome. * * * In my notes of warning, in 1869, I reported that Dr. Cohn, of Breslau, Germany, took the bodily measurement of more than ten thousand children whose eyes he had tested; and measured in comparison, the school desks and seats, from which he found that all school furniture was badly constructed, so as to readily induce or increase nearsightedness. We sent from America with considerable pride our school furniture and appurtenances to the Paris World's Fair. These were carefully examined and measured by Dr. Cohn, and, like all the others, found so arranged as to produce the evils spoken of." * *

"School-books, text and reference, are bitterly complained of by all the gentlemen who have been at work testing the children's eye-sight in different parts of the world. Of course poor paper, bad impressions, worn-out type, and crowding the pages by finer and finer type, mean more money for the contractors who over-persuade committees and school boards." This is followed by an elaborate and lucid explanation of the way in which a reform in printing school books could be made to check the tendency to visual disease produced in children by reading books defectively printed.

On the subject of far-sightedness Dr. Jeffries thus speaks:—

"Of as great if not greater importance in relation to the eyes of our industrial classes is the congenital condition called hypermetropia, or over-sightedness. Myopia, or near-sightedness, is due to the globe being *too long* or egg-shaped; and the other condition is due to the globe being *too short*, or *too flat*. It is a very common natural defect, only understood the last five and twenty years in its very practical bearings. When we look at a near object we recognise, by a sensation of effort, that the eye has to adapt itself or become focussed—*accommodate*, as it is technically called—for the distance of the near object. Now this power of change in the eye's focus is greatest when we are some *ten years old*, and gradually decreases from then onward through life. The shorter the globe, the greater must be this accommodation; that is, the more hypermetropic, the greater the strain. When this change becomes difficult, and the strain causes pain, then the only relief is the use of carefully adjusted glasses. The community have finally recognised the need of glasses with near-sightedness, and are beginning to heed the repeated declaration of the fact that

increasing myopia is most dangerous, leading not infrequently to total blindness. The natural and congenital condition of the eye-ball being *too* short has not yet been appreciated or acknowledged by the laity, much less its ready relief by the use of properly adjusted convex glasses. A distinguished London ophthalmic surgeon long ago said, ‘Inability to use the eyes without pain and discomfort is, in the great majority of cases, due to over-sightedness; and those patients who under any other course of treatment haunt our out-patients’ rooms for months and years without relief, may be speedily and permanently cured by the proper treatment of their hypermetropia, by glasses. Let us but consider the crowd of seamstresses, watchmakers, engravers, etc., who are rendered incapable of following their employment, whose future is starvation if this fact is not attended to. This is no fancy or exaggerated statement, but the every-day experience of all ophthalmic surgeons. About one-third of the cases of trouble with the refraction or accommodation of the eye are dependent on this congenital condition of the eye being *too* short, an optical defect only to be remedied by the use of convex glasses.’”

In a report on School Hygiene, in the Philadelphia Ledger of Feb. 15, 1884, we have the following :—

“The first thing that struck my attention (on visiting the schools) was the seating. The children sat facing the light, which, in rooms with certain exposures, was absolutely unbearable. That such exposure would necessarily exert a most injurious effect upon the eyes of the scholars was apparent to me at a glance. I had not then heard of Dr. Risley’s examinations. For the purpose of verifying my conclusions, each teacher was requested to report the number of scholars in her school and the number of those afflicted with myopia or near-sightedness to such an extent as to render the deciphering of the markings on the blackboard difficult except at short range. I have those reports here, and hope they will be deemed of sufficient importance to induce an examination of them.

“They are not offered as the results of scientific investigation, nor is it claimed that all these myopic cases are chargeable to the public schools. Whether as many of them as have had direct origin in the schools are due to the pernicious system of seating or to a multiplicity of causes, among which may be named the admission of draughts of cold air from open windows or doors, unwise location of blackboards, bad ventilation and a tainted atmosphere—the natural result

of overcrowding the school rooms, or to all of these unhealthful causes combined, is a question which science only can determine. Here are the naked facts as furnished by the teachers. I leave you to draw your own inferences :

| | |
|--|----------------|
| Boys' primary, percentage of nearsight, about | 5 |
| Girls' primary, percentage of nearsight, about | 8 |
| Boys' secondary, percentage of nearsight, about | $8\frac{1}{2}$ |
| Girls' secondary, percentage of nearsight, about | 14 |

" In one of the buildings containing primary, secondary and grammar schools the percentage, commencing with 5 per cent. in the primary, increased to $16\frac{2}{3}$ in the grammar school. In the grammar school proper, the report of the principal shows an average of 3 per cent., which is certainly more favorable than any of the others. It is proper to state that, while in some of the primary schools the percentage reached 8, in five of them no cases were reported, but there was no such exemption in the higher grades. It is also worthy of notice that in the primary and secondary schools the percentage of girls afflicted with nearsight was largely in excess of boys in the same grades, the excess amounting to about $37\frac{1}{2}$ per cent. in the primary and 40 per cent in the secondary. I had no data on which to base a comparison between the two in the higher grades."

That there should be abnormal conditions of the visual organs may be expected not only from the nature of things but from the frequency with which such conditions appear in the other perceptive organs. "To herself," says Mr. James Payn, writing of Harriet Martineau,¹ "eating and drinking mattered nothing; she had no sense of taste whatever. 'Once,' she told me with a smile, when I was expressing my pity for this deprivation of hers, 'I tasted a leg of mutton, and it was delicious. I was going out, as it happened, that day, to dine with Mr. Marshall at Coniston, and I am ashamed to say that I looked forward to the pleasures of the table with considerable eagerness; but nothing came of it; the gift was withdrawn as suddenly as it came.' The sense of smell was also denied her, as it was to Wordsworth; in his case, too, curiously enough, it was vouchsafed to him, she told me, upon one occasion only. He once smelt a beanfield, and thought it Heaven."

The sight, it is also to be remembered, is made more or less acute

¹ New York Independent, Jan. 31 1884.

by practice as well as by aptitude, inherited or acquired.¹ “Thus the Bedouin, so often engaged in irregular warfare, strains his eyes to the horizon in search of a coming enemy, just as habitually as the sailor keeps his ‘bright look-out’ for a strange sail. In the absence of telescopes, a far-reaching sight is highly valued, and Lady Hester (Stanhope) possessed this quality to an extraordinary degree. She told me that on one occasion, when there was good reason to expect hostilities, a far-seeing Arab created great excitement in the camp, by declaring that he could just distinguish some moving objects upon the very farthest point within the reach of his eyes. Lady Hester was consulted, and she instantly assured her comrades in arms, that there were indeed a number of horses within sight, but that they were without riders; the assertion proved to be correct, and from that time forth her superiority over all others, in respect of far sight, remained undisputed.”² The same peculiarity marks North American Indians, and in a less degree sailors accustomed to the lookout.

Proof of drunkenness, in a party offered as a witness, as is elsewhere seen,³ is admissible to impeach a witness for the purpose of showing that he was incapable either of correctly observing or of correctly narrating the facts as to which he is called to testify. Drunkenness unquestionably diminishes, when it does not paralyze the powers of observation; yet it does not follow from this fact that a party who is so drunk as to be unable, when not aroused, to accurately see what is going on about him, may not be capable of accurate observation, and accurate perception when aroused. In a well-known epigram the condition of Pitt and Dundass on entering the House of Commons after heavy drinking of Port, is thus described:

“I cannot see the Speaker, Harry, how with you ?
Not see the Speaker, William, I see two ?”

Yet, however, this may have been, and however muddy Pitt’s perceptive power may have been if unaroused, when it became necessary for him to take part in debate, he recovered full possession of his great intellectual faculties.

§ 942. *Aptitude for Classification.*—Confusion of mind produced by a sudden emergency, may sometimes produce a visual mistake. On

¹ *Supra*, § 924.

² *Eôthen*, ch. viii., p. 93, 5th ed.

³ *Whart Ev.* § 418.

⁴ See *supra*, § 768 for the mistake of a druggist thus produced.

the other hand, a mind trained to discriminate between objects will readily guide the eye in determining the import of an object which to an untrained observer would be meaningless.

Admiral Ammen, in his work on the Atlantic Coast, in the series on the "Navy in Civil War," (p. 75), thus describes the approach of the confederate iron clads in Charleston harbor, Jan. 31, 1863: "Between 4 and 5 A. M. a gun, supposed from the Mercedita, was heard. Lights were seen, and soon a dark object a little ahead of her, and a column of black smoke * * was seen more to the north and east. The suspicions of the captain were aroused, and he ordered the forward rifle trained upon the vessel approaching from the Mercedita." The "dark object," "the smoke," "the lights," were what the officers of the Mercedita saw; from these they inferred that the "object" was a confederate ram of whose preparation they had heard.

Sir John Herschel, so we are reminded by Dr. Carpenter,¹ stated that he was subject to the involuntary occurrence of visual impressions, into which geometrical regularity of form entered as the leading characteristics. "If it be true that the conception of a regular geometrical pattern implies the exercise of thought and intelligence, it would almost seem that in such cases * * * we have evidence of a *thought*, an intelligence, working within our own organization distinct from that of our own personality in a manner we have absolutely no part in, except as spectators of its results."² But be this as it may, an observer accustomed to scientific classification will at once arrange in compartments a series of objects which to less trained observers may seem a confused mass. The subtle lines of demarcation imperceptible to others are perceptible to him.

§ 943. *Expectancy*.—The condition of mind with regard to the probability of a recognition has much to do with such recognition. We go to a city where a friend resides, and as it is not improbable that we may meet him, we look, either consciously or unconsciously, at every face we meet with the probability of recognition in view. We have not such an expectation hovering over us in a city where we would not expect to see him, and consequently the recognition in such a city is much more tardy.

Sir Walter Scott, in his "Demonology," gives the following: An armed force was expected on the opposite bank of the river Clyde, in

¹ Mental Physiology, § 103.

² Herschel, Lectures on Scientific Subjects, p. 406.

1686, an era when Scotland was much disturbed. A number of persons were collected on the bank, among whom many saw companies of men in arms marching along and then disappearing. By two-thirds of those thus straining their eyes in gazing at the opposite bank these unreal troops were seen.

In a prior volume is given Dr. Wigan's statement of an analogous illusion. He was attending a soiree given in Paris, shortly after the execution of Marshal Ney, an incident which was looked upon with horror by a large part of the community and with regret by almost all the remainder. "On the arrival of a visitor, M. Maréchal ainé, the usher announced Maréchal Ney. Dr. Wigan states that an electric shudder ran through the company, and he owns that the resemblance of the prince was, for a moment, as perfect to his eyes, as if it had been the reality."¹

Lady Tichborne's recognition of the claimant as her lost son may be explained on the ground of her earnest and passionate desire that the claimant should turn out to be that son. Dr. Hammond, in his work on Spiritualism, thus speaks to the same point: "A so-called 'spiritual photograph' is shown to a sorrowing mother, and immediately she recognises the features of her dead son; the wish is in such cases father to the thought. I have repeatedly known the same photograph acknowledged to be the exact likeness of several very different persons, solely because those who looked at it, and carefully examined every feature, were told beforehand that it was a correct portrait of some one in whom they were specially interested."

"Some, however," says Scott, in "*Guy Mannering*," "demanded of the postillion how he had not recognised Bertram when he saw him some time before at Kippletringan? To which he gave the very natural answer: 'Hout, what was I thinking about Ellangowan then? It was the cry that was rising e'en now that the young laird was found, that put me on finding out the likeness. There was nae missing it ance ane was set to look for't.'"

§ 944. *Idealization*.—In the same line may be mentioned the tendency to idealize objects by investing them with incidents, either real or unreal, with which our memory associates them. We are accustomed, for instance, to see a particular person in a place, and when we recall that place, we recall it as occupied by that person.

¹ Tuke on Influences of Mind on Body, 45. See, also, Dr. E. H. Clarke's valuable work on *Visions*, Boston, 1878.

A good deal of the discrepancies of testimony can be thus accounted for. I make a deposit, as I suppose, in B. bank, but by mistake I hand it to the receiving teller of C. bank. When I endeavor to recall the fact, I invest the supposed deposit with the usual incidents of a deposit in B. bank, and if I am called as a witness, give honestly but erroneously, all that circumstantiality of detail which is supposed to be one of the marks of truth.

"It is a matter of frequent observation that persons dwelling for a long time on facts which they believe must have occurred, and trying to remember whether they did so or not, come at last to persuade themselves that they do actually recollect the occurrence of circumstances, which at first they only begin by believing must have happened. What was originally the result of imagination becomes in time the result of recollection; and the judging of which, and drawing just inferences from which, is rendered much more difficult by the circumstance that in many cases, persons do really, by attentive and careful recollection, recall the memory of facts which had faded away, and were not, when first questioned, present to the mind of the witness. Thus it is, that a clue given or a note made at the time, frequently recalls facts which had passed from the memory of the witness."¹

With this may be placed the idealization of objects by their historical or social incidents. Thus when we visit, as we advance in years, the scenes of our childhood, they are filled with the images of those who occupied them in past days; and when we dream of them, they appear in the old surroundings. In the same way we idealize faces by adapting them to their past or present conditions. We have a striking illustration of this in the following by Mr. Archibald Forbes: "I have seen Napoleon III. at the pinnacle of his hollow splendor. From the German picket line, on the 2d of August 1870, I heard the distant cheering of the Spicherenberg that greeted him and the lad whom he had brought from Metz to receive that day his 'baptism of fire.' Again I saw him on the morning after Sedan, as the broken man—broken in power, in prestige, in health, in spirits—sat with Bismarck on the grass plot in front of the weaver's cottage on the Donchery road. Next morning I witnessed his departure into his Wilhelmshohe captivity. I have seen him

¹ Sir John Romilly, M. R., 16 Beavan 185.

doddling about Brighton and strolling under the beech trees that encircle Chislehurst Common. And for the last time of all I saw that stolid, careworn face, as it lay on the raised pillow of the bier in the broad corridor of Camden Place; and when the face was no more visible I witnessed the coffin lid down in the little chapel among the Chislehurst elm trees. I knew the boy of the Empire when the shackles of the Empire had fallen from his limbs, and he was no longer a buckram creature, but a lively, natural lad. My acquaintance endured into his manhood. When the twilight was falling on the rolling veldt of Zululand, and his day's work in the staff-tent was done, he liked, as it seemed to me, to gossip with one who knew the other side of the picture, about the early days of the Franco-German war—a war that had wrought at once his ruin and his emancipation. And finally, poor gallant lad! I saw dimly through tears the very last of him, as he lay there dead on the blood-stained sward by the Ityotyosi river, with a calm, proud smile on his face, and his body pierced by countless assegai stabs. Men have called his death ignoble. Petty as was the quarrel, wretched as was the desertion that wrought his fate, I call him, rather, happy in the opportunity of his death. Had he lived, what of artificiality, what of hollow unreality might there not have been in store for him! As it was, he had moved in the world a live ghost. Better than this, surely to be a dead hero—to end the Napoleonic serio-comedy with his young face gallantly to his assailants and his life-blood drawn by the cold steel!"

The expression with which we invest faces shifts with the shifting of our conceptions of the people themselves. A gentleman who once acted as district attorney, thus writes: "Once, on the trial of a burglar, who was an old convict of singularly degraded character, I could not avoid saying to the jury that the very looks of the man went to strengthen the evidence which bore against him in overwhelming force. Certainly I never saw what appeared to me a more villainous face; and this supposed villainous expression was intensified by a habit he had of flinching when looked at steadily, and then turning a furtive glance to see if he was still watched. Yet, after all, it was not the burglar on whom I had my eye, but a lawyer who sat next to him, and whom I did not then know; but who was in fact one of the most modest and upright members of the bar."

Dr. Tuke¹ gives the following: "A lady was walking one day from

¹ Influences of Mind on Body, 44.

Perryn to Falmouth, and her mind being at that time, or recently, occupied by the subject of drinking fountains, thought she saw in the road a newly-erected fountain, and even distinguished an inscription on it, namely :

“ ‘ If any man thirst, let him come to me and drink.’

Some time afterwards, she mentioned the fact with pleasure to the daughters of a gentleman who was supposed to have erected it. They expressed surprise at her statement, and assured her that she must be quite mistaken. Perplexed with the contradiction between the testimony of her senses and of those who would have been aware of the fact had it been true, and feeling that she could not have been deceived, she repaired to the spot, and found to her astonishment that no drinking fountain was in existence—only a few scattered stones, which had formed the foundation upon which the suggestion of an expectant imagination had built the superstructure. The subject having previously occupied her attention, these sufficed to form, not only a definite erection, but one inscribed by an appropriate motto, corresponding to the leading idea.”

The following, also, is taken from Dr. Tuke:¹ “ During the conflagration at the Crystal Palace in the winter of 1866–7, when the animals were destroyed by the fire, it was supposed that the Chimpanzee had succeeded in escaping from his cage. Attracted to the roof, with this expectation in full force, men saw the unhappy animal holding on to it, and writhing in agony to get astride one of the iron ribs. It need not be said that its struggles were watched by those below with breathless suspense, and, as the newspapers informed us, ‘ with sickening dread.’ But there was no animal whatever there; and all this feeling was thrown away upon a tattered piece of blind, so torn as to resemble, to the eye of fancy, the body, arms and legs of an ape.”

§ 945. *Terror*.—Terror, also, has the effect of magnifying objects by which it is excited. “ How often has the once tame enough black dog swelled to a monstrous size as evening’s shades have overtaken the returning child.”² In this way can be explained the gross mistakes made by the officers of retreating armies. Their victorious pursuers are generally vastly overestimated. Some of the extraor-

¹ Op. Cit., p. 44; Clarke on *Visions*, p. 242.

² Elliott’s *Mysteries* (1852), p. 71.

dinary misstatements in the evidence taken before "outrage" investigating committees can be thus explained. A timid negro, for instance, might readily magnify ten-fold an assault made on him; or convert that which was a practical joke, or an attempt merely to frighten, into a murderous attack.

§ 946. *Illusions*.—The question how far illusions affect the vision is considered in detail in a prior volume.¹ The following additional illustrations may be here given :

The late Earl Grey, so we are told by a writer in Chambers's Encyclopedia (tit. Hallucination), was haunted by a gory head, which, however, by an exercise of his will, he could dismiss. Swedenborg, less successful in this respect, not only saw but was compelled to see members of the heavenly hierarchy, even when he was engaged in affairs of state; and no matter who might be among his colleagues and audience, he greeted these heavenly visitors with a profound obeisance. "We know a gentleman of strong mind and a most accomplished scholar, who was for many years subject to such phantasms, some sufficiently grotesque; and he would occasionally laugh heartily at their antics."² That by many spiritualists of the present day spirits "materialized" are honestly believed to be seen, there can be no question.

Mr. Braid, in his work on "Hypnotism," chapter xxiii., mentions the case of a lady who was placed in a dark closet, and desired to look closely at the poles of a horse-shoe magnet and then state what she saw. After looking for some time she said she saw nothing. Mr. Braid then told her to look more closely and she would see fire coming out of it. Soon she declared she saw sparks bursting forth in showers. Mr. Braid then shut the lid of the box containing the magnet, but still the sparks began to stream forth. "By putting leading questions, and asking her to describe what she saw from another part of the closet (where there was nothing but bare walls), she went on describing various shades of most brilliant coruscations and flame, according to the leading questions I had put for the purpose of changing the fundamental ideas."³

¹ *Supra*, vol. i., §§ 34, 135 *et seq.*; 723 *et seq.*

² Carpenter, *Ment. Phys.*, § 148.

³ Mr. Galton, in his "Inquiries into Human Faculty," (1883), p. 167, thus writes: "A notable proportion of sane persons have had not only visions, but actual hallucinations of sight, sound or other sense, at one or more periods of

Under this head may be noticed the statements of Lady Florence Dixie, made in February 1883, to the effect that she had been assaulted and wounded by parties she believed to be Irish conspirators, to whose vengeance recent publications of hers were supposed to have exposed her. There is no question that she believed she had been their lives. I have a considerable packet of instances contributed by my personal friends, besides a large number communicated to me by other correspondents. One lady, a distinguished authoress, who was at the time a little fidgeted, but in no way overwrought or ill, assured me that she once saw the principal character of one of her novels glide through the door straight up to her. It was about the size of a large doll, and it disappeared as suddenly as it came. Another lady, the daughter of an eminent musician, often imagines she hears her father playing. The day she told me of it the incident had again occurred. She was sitting in her room with her maid, and she asked the maid to open the door that she might hear the music better. The moment the maid got up the hallucination disappeared."

"A convenient distinction is made between hallucinations and illusions. Hallucinations are defined as appearances wholly due to fancy; illusions as fanciful perceptions of objects actually seen. There is also a hybrid case which depends on fanciful visions fancifully perceived. The problems we have to consider are, on the one hand, those connected with '*induced*' vision, and, on the other hand, those connected with interpretation of vision, whether the vision be *direct* or *induced*."

Ibid. p. 169.

"It is remarkable how largely the visionary temperament has manifested itself in certain periods of history and epochs of national life. My interpretation of the matter, to a certain extent, is this: That the visionary tendency is much more common among sane people than is generally suspected. In early life it seems to be a hard lesson to an imaginative child to distinguish between the real and visionary world. If the fantasies are habitually laughed at and otherwise discouraged, the child soon acquires the power of distinguishing them; any incongruity or nonconformity is quickly noted, the visions are found out and discredited, and are no further attended to. In this way the natural tendency to see them is blunted by repression. Therefore, when popular opinion is of a matter-of-fact kind, the seers of visions keep quiet; they do not like to be thought fanciful or mad, and they hide their experiences, which only come to light through inquiries such as these that I have been making. But let the tide of opinion change and grow favorable to supernaturalism, then the seers of visions come to the front. The faintly perceived fantasies of ordinary persons become invested by the authority of reverend men with a claim to serious regard; they are consequently attended to and encouraged, and they increase in definition through being habitually dwelt upon. We need not suppose that a faculty previously nonexistent has been suddenly evoked, but that a faculty long smothered by many in secret has been suddenly allowed freedom to express itself, and to run into extravagance owing to the removal of reasonable safeguards." Ibid. p. 176.

attacked. There is as little question that her belief was unfounded. If it be said that this leaves the bruises on her body unaccounted for, the answer is that cases are not unknown in which violent nervous apprehension or excitement has displayed itself in sympathetic wounds.¹

§ 947. "*Seeing sparks.*"—Whether an assailant can be recognised by the light produced by what is called "seeing sparks," consequent on a blow on the eye has been seriously discussed. Such sensations, however, as is observed by Dr. Tidy, are not uncommonly felt by those who are totally blind. And there will be few who will now dissent from the expression of astonishment by the last-named eminent author that medical jurists should have deemed this matter worthy of notice.²

§ 948. *Color blindness; its nature and kinds.*—The subject of color blindness has been recently attracting such great and deserved attention, that an exposition of its nature will not be out of place. This abnormal condition of vision was brought prominently before the public by Mr. Dalton, in a tract from which the following is extracted:

"It has been observed that our ideas of colors, sounds, tastes, &c., excited by the same object may be very different in themselves, without our being aware of it; and that we may nevertheless converse intelligibly concerning such objects, as if we were certain the impressions made by them on our minds were exactly similar. All, indeed, that is required for this purpose is, that the same objects should uniformly make the same impression on each mind; and that objects which appear different to one should be equally so to others. It will, however, scarcely be supposed that any two objects which are every day before us, should appear hardly distinguishable to one person, and very different to another, without the circumstance immediately suggesting a difference in their faculties of vision; yet such is the fact,

¹ I am permitted by an English lady of high respectability whom I met at San Remo in the winter of 1882–3, to give the following:

"A cousin of mine saw a gate shut on a boy's leg and felt exactly the pain in her own which she would have had, had the accident happened to herself. Going home and taking off her stocking the part was found to be discolored, and had to be treated by a surgeon as if it had been bruised by the gate. The case was sent to 'The Lancet' at the time." In the same way may be explained the *stigmata* on the hands of saints, and the marks on newborn children, produced by the mother's nervous condition.

² Muller's "Physiology;" Shilbach and Krugelstein in Henke's "Zeitschrift der S. A.," 1842, I., 197, and 1845, III., 172.

not only with regard to myself, but to many others also, as will appear in the following account. I was always of opinion, though I might not often mention it, that several colors were injudiciously named. The term pink, in reference to the flower of that name, seemed proper enough; but when the term red was substituted for pink, I thought it highly improper; it should have been blue, in my apprehension, as pink and blue appear to me very nearly allied; whilst pink and red have scarcely any relation. In the course of my application to the sciences, that of objects necessarily claimed attention; and I became pretty well acquainted with the theory of light and colors before I was apprised of any peculiarity in my vision. I had not, however, attended much to the practical discrimination of colors, owing, in some degree, to what I conceived to be a perplexity in their nomenclature. Since the year 1790, the occasional study of botany obliged me to attend more to colors than before. With respect to colors that were white, yellow or green, I readily assented to the appropriate term. Blue, purple, pink and crimson appeared rather less distinguishable; being according to my idea, all referable to blue. I have often seriously asked a person whether a flower was blue or pink, but was generally considered to be in jest. Notwithstanding this, I was never convinced of a peculiarity in my vision, till I accidentally observed the color of the flower of the geranium zonale by candle light, in the autumn of 1792. The flower was pink, but it appeared to me almost an exact sky-blue by day; in candle-light, however, it was astonishingly changed, not having then any blue in it, but being what I called red, a color which forms a striking contrast to blue. Not then doubting but that the change of color would be equal to all, I requested some of my friends to observe the phenomenon; when I was surprised to find they all agreed that the color was not materially different from what it was by daylight, except my brother, who saw it in the same light as myself. This observation clearly proved that my vision was not like that of other persons; and, at the same time, that the difference between day-light and candle-light, on some colors, was indefinitely more perceptible to me than to others. It was nearly two years after that time, when I entered upon an investigation of the subject, having procured the assistance of a friend who, to his acquaintance with the theory of colors, joins a practical knowledge of their names and constitutions. I shall now proceed to state the facts ascertained under the three following heads:

- "I. An account of my own vision.
- "II. An account of others whose vision has been found similar to mine.
- "III. Observations on the probable cause of our anomalous vision."

On a subsequent page he writes :

"It then appeared to me probable that a considerable number of individuals might be found whose vision differed from that of the generality, but at the same time agreed with my own. Accordingly, I have since taken every opportunity to explain the circumstances amongst my acquaintance, and have found several in the same predicament. Only one or two I have heard of who differ from the generality and from us also. It is remarkable that, out of twenty-five pupils I once had, to whom I explained this subject, two were found to agree with me; and, on another similar occasion, one. Like myself, they could see no material difference betwixt pink and light-blue by day, but a striking contrast by candle-light. And, on a fuller investigation, I could not perceive they differed from me materially in other colors. They, like all the rest of us, were not aware of their actually seeing colors different from other people; but imagined there was great perplexity in the names ascribed to particular colors. I think I have been informed already of nearly twenty persons whose vision is like mine. The family at Maryport consisted of six sons and one daughter; four of the sons were in the predicament in question. Our family consisted of three sons and one daughter, who arrived at maturity; of whom two sons are circumstanced as I have described. The others are mostly individuals in families some of which are numerous."

The present tendency¹ is to adopt the following classification, accepted both by Dr. Holmgren and by Dr. de Fontenay, of Copenhagen ("Nordiskt-Mediciniskt-Arkiv," 1880): 1. Total color-blindness; 2. Partial color-blindness: (a) Complete blindness of red, green or violet; (b) Incomplete color-blindness; (c) Feeble sense of color. The last (c) is not Daltonism properly so called, and is omitted in the statistics. The examinations were made by means of Holmgren's colored wools, and in some of the cases in which color-blindness was detected, the results were controlled by various additional tests. In an examination made by Dr. de Fontenay, he states that two cases of violet

¹ See Tidy Leg. Med. *ut supra*.

blindness which were incompletely examined being excluded, there were found to be 56 cases of red blindness, 24 of green blindness, and 135 of incomplete color-blindness. In all cases, both eyes were examined separately, and found to be affected. As regards the relation between the color of the eyes and color-blindness, Dr. de Fontenay does not find any special predominance in dark or in fair individuals.¹

§ 949. *Cause of.*—It is generally agreed among oculists that color-blindness is congenital, though in some cases it may result from disease, in others from accident; and it has been said to be traced in some cases to the excessive use of stimulants. The law of heredity so far prevails in respect to color-blindness, that it is not uncommon to find the peculiarity following in a family channel; though the general rule, according to Professor Homer, of Zurich, is that, sons of daughters whose father was color-blind, are likely also to be color-blind, the type thus descending from grandfather to grandchild. The better view, however, is, that where a family for several generations falls into general disuse of the perception of color, this may tend in that family to the multiplication of cases of color-blindness, while the contrary is the case with families in which the faculty of color discrimination is in constant exercise. Thus it is said by high authority, that the proportion of persons in the Society of Friends suffering with this complaint is far above the average,² while the proportion

¹ In a paper published by Dr. H. M. Bannister in the Journal of Nervous and Mental Diseases, vol. viii., No. 1, (Jan. 1881), the following conclusions are stated :

“ 1. Color-blindness, when partial and incomplete, is, in some instances at least, a functional defect of the higher cortical centres concerned in sight. It amounts in some cases to merely a retardation of perception of certain colors, and may be compensated for to some extent by mental effort and attention.

“ 2. Inasmuch as this form of color defect is a mental one that can be more or less overcome by effort, there is a possibility of its modification, if not of its complete cure, by exercise and education, as it is the rule that the mental powers are improved by exercise. Its practical importance is, therefore, somewhat modified by this fact.

“ 3. Holmgren’s test, while revealing very slight defects of the color-sense, also magnifies them, and as usually employed in this country, takes no account of this mental element. It should, therefore, in justice to the examined, be supplemented in all cases of partial color-blindness by other and more practical tests.”

² Mr. Galton, in his “Inquiries into Human Faculty” (1883), p. 47, thus writes :

“ I may take this opportunity of remarking on the well-known hereditary

among Indians is far below the average. Among negroes, also, with whom the sense of color is strong, and who, like Indians, depend character of color-blindness, in connection with the fact that it is nearly twice as prevalent among the Quakers as among the rest of the community, the proportion being as 5·9 to 3·5 per cent. We might have expected an even larger ratio. Nearly every Quaker is descended on both sides solely from members of a group of men and women who segregated themselves from the rest of the world five or six generations ago; one of their strongest opinions being that the fine arts were worldly snares, and their most conspicuous practice being to dress in drabs. A born artist could never have consented to separate himself from his fellows on such grounds; he would have felt the profession of those opinions, and their accompanying practices, to be a treason to his æsthetic nature. Consequently few of the original stock of Quakers are likely to have had the temperament that is associated with a love for color, and it is in consequence most reasonable to believe that a larger proportion of color-blind men would have been found among them than among the rest of the population. Again, Quakerism is a decreasing sect, weakened by yearly desertions and losses, especially as the act of marriage with a person who is not a member of the society is necessarily followed by exclusion from it. It is most probable that a large proportion of the deserters would be those who, through reversion to some bygone ancestor, had sufficient artistic taste to make a continuance of Quaker practices too irksome to be endured. Hence the existing members of the Society of Friends are a race who probably contained, in the first instance, an unduly large proportion of color-blind men, and from whose descendants many of those who were not born color-blind have, year by year, been drafted away. Both causes must have combined with the already well-known tendency of color-blindness to hereditary transmission, to cause it to become a characteristic of their race. Dalton, who first discovered its existence, as a personal peculiarity of his own, was a Quaker to his death. Young, the discoverer of the undulatory theory of light, and who wrote specially on colors, was a Quaker by birth, but he married outside the body and so ceased to belong to it."

As sustaining Mr. Galton's views as to the development of color-perception by exercise, may be quoted the following from an address in January 1884, by Professor Straight, of Oswego, N. Y., to the school teachers of Hartford, Conn.:

"If we can think of the little child, just born into the world, its-senses just opening to the world—the eye, the ear and the touch—of the impressions from the external world showering down upon those senses—there is the beginning. The waves of ether, from the bright light beat upon the eye, and the child at once distinguishes the bright light from darkness. Soon bright colors attract the attention; and so it begins at the outset to study optics, discovering light and shade. Form next comes into its consciousness. Thereby it learns to distinguish its mother or nurse from other people. I was told of an experiment tried lately by a teacher at a kindergarten. A very young child had been accustomed to see a bright dress upon its mother, and knew her only by color. A young lady friend put on the mother's dress and came into the room where the baby was, and was immediately taken for the mother. The child had not

largely on color and shape as guides, the proportion is very small. Among 1359 negro children, for instance, examined by Dr. S. M.

progressed far enough to distinguish between them by form. Other children were similarly experimented upon, but they had been educated in form and color so as not to be mistaken. After discovering optics and forms the child begins to study sound, and soon distinguishes the mother's voice from any other voice. It also learns to distinguish striking sounds from sounds produced otherwise. Next follows the knowledge of number."

Dr. Cullen, of Kundwa, on examining 430 railway officials in India for color-blindness, found among the Half-breeds, 1·6 per cent., among the Mahomedans, 7·31 per cent., and among the Hindoos, 3·16 per cent. suffering from this defect. The extraordinarily large per centage of color-blindness among Mahomedans in India, may be explained by the depression of the color faculty among them by the discountenancing of pictures and of the pursuit of game.

For the following interesting letter we are indebted to Dr. Charles J. Stillé:

"Color-blindness, as I understand it, consists not in an insensibility to primary colors, but in the incapacity, greater or less, of distinguishing one from the other. Thus a friend of mine, an eminent physician, could see plainly the ripe cherries on a tree, but he supposed them to be as green as the foliage by which they were surrounded.

"In the absence of any accurate knowledge of the cause of this defect of vision, or of determining whether it be due to imperfection in the *retina* or in the brain, it would seem that like all our perceptive faculties the capacity to distinguish colors is affected by disease or constant exercise. Thus, with the Quakers; I can easily understand that among the primitive ones, the use of bright colors in dress and furniture, has strangely associated with it the idea of sinfulness. This notion, perpetuated through generations, may have, in many cases, become a hereditary instinct, rendering them insensible from disease to the distinction between such colors. But I never heard before that Quakers mistook (as Quakers) one color for another.

"When I was a boy, and Quaker women dressed in what was then called 'friendly style,' it was the common remark of the shop-girls that none of their customers were so quick to perceive the shades of the drab or sad colored stuffs they were permitted to wear as these women. The sense of sight, in this respect, seems to have acquired greater acuteness from the narrowness of the field of vision.

"So with the Mahomedans. Doubtless the original Arabs, from living chiefly in the desert, had, from want of use, little capacity to distinguish colors, just as it is conceivable might be the case with a man who spent his whole life at sea. But as soon as the *environment* was changed, then education in this matter began, and so far as I know, brilliancy of color in decoration is not found any where in greater variety or more gorgeous in all its effects, than at Grenada, at Bagdad and at Delhi, the three widely separated seats of the Mohammedian power and civilization. So far as I know there is nothing in their religion, and certainly not in their practice, which tends to repress the

Burnett at Washington, only twenty-two were found who were color-blind."

In examinations reported by Dr. Tidy, however, exact information was obtained in 34 cases, in 27 of which heredity was denied. In two of the remaining cases, the fathers were color-blind in the same way as the subject examined. The parents of another had normal vision; but a paternal uncle, two brothers, and the son of the person examined were color-blind. In the parents and grandparents, and in the son of another person, the color sense was normal; but his brother and three maternal uncles had color-blindness. In another case, the perception of colors was normal in the father, mother, brothers and sisters; but the maternal grandfather, a maternal cousin (male), and the son of a female cousin on the mother's side, were the subjects of Daltonism. Another of the color-blind persons had four relatives who were similarly affected, viz.: A maternal uncle and cousin, his mother's grandfather and a brother. There was no instance of consanguineous marriage among Dr. de Fontenay's cases of color-blindness.

§ 950. *Prevalence of.*—The prevalence of color-blindness is an important factor to be taken into consideration. According to a report of the committee on naval affairs in the Federal House of Representatives in 1881, it is stated that reliable statistics from "the best medical experts in Europe and America have proved the existence of color-blindness in about 4 per cent. of men, while in women this defect is very rare." The total number of persons examined by Dr. de Fontenay was 9650, of all ages from eight years upwards; 6945 being above the age of 16, and 2714 below that age. Of the whole number, 217, or 2.25 per cent. were color-blind. Of 4492 adult males, 165, or 3.7 per cent. had color-blindness. Among these 1001 belonged to the upper classes, and showed a percentage of 3.09; while in 3491 artisans, laborers, etc., the per centage was 3.87. According to Dr. Tidy the per centages of color-blindness varies greatly with the employment of the individual. Thus, of 2737 railway officials, 3 per cent. were color-blind; of 183 post office officials, 9.28 per cent.; of 930 artisans of various kinds, 3.22 per cent. It is not certain how far these proportions are accidental, or how far the greater prevalence

sense of color among Mohammedans. The prohibition extends to *form* only. I am unable to understand why Quakers or Mohammedans *qua* such, should be liable to mistake one color for another, and I can find nothing in their religion or in their history which would account for it."

of color-blindness in the lower orders may be due to defective cultivation of the sense of color, or to heredity. In any case, Dr. de Fontenay's observations agree with those of Holmgren, Magnus and others. Dr. Tidy also stated that "of 6945 adults above the age of 16 (4492 males and 2453 females), 176 or 2.56 per cent. were found to be color-blind. Among the females there were only 16 cases of color-blindness or 0.45 per cent. Adding to these the female children who were examined, a total is obtained of 3819, among whom there were 16 color-blind individuals, 0.42 per cent.; while in a total of 5840 males (adults and children), the number of cases of Daltonism was 201 or 3.44 per cent. All the sixteen color-blind females belonged to the working classes. Among the 2714 children, aged from eight to sixteen, 41 or 1.51 per cent. were color-blind, viz.: 1348 boys with 36 color-blind, or 2.67 per cent.; and 1366 girls with 5 color-blind, or 0.37 per cent."¹

¹ In a report made in 1883, on The Practical Examination of Railway Employees, as to color-blindness, etc., by Prof. William Thomson, M.D., professor of ophthalmology in the Jefferson Medical College, we have the following: "The entire number reported as *defective* in color-sense, 4 $\frac{1}{2}$ per cent., is up to the average as reported by the best authorities in its per centage, but those absolutely color-blind, and hence unable to distinguish between a soiled white or gray and green, or a green and red flag, are fully 4 per cent.; and this proves that the instrument employed in this part of the examination has met our expectations fully."

"My conclusions from a study of the subject in connection with the railway service are:

"1. That there are many employees who have defective sight, caused either by optical defects, which are, perhaps, congenital, and which might be corrected with proper glasses, or due to the results of injuries or diseases of the eyes, remediable or not, by medical or surgical treatment.

"2. That one man in twenty-five will be found color-blind to a degree to render him unfit for service where prompt recognition of signals is needed, inasmuch as color-blindness for red and green renders signals of these colors indistinguishable. It is a fact in physiological optics, however, that yellow and blue are seen by those color-blind for red and green, and that yellow-violet blindness is so rare that it might lead to the use of these yellow and blue colors, in preference to red and green, wherever possible.

"3. That color-blindness although mainly congenital and incurable, is sometimes caused by disease or injury, and that precautions might be needed to have either periodical examinations or to insist upon it in cases where men have suffered from severe illness or injury, or when they have been addicted to the abuse of tobacco or alcohol.

"4. That the method, when adopted, will enable the authorities to know

§ 951. *Evils incident to.*—The evils incident to color-blindness may be grouped as follows:

- (a) Mistake of signals on land or sea.
- (b) Mistake in color of uniforms or of flags in war.
- (c) Mistake in medicines, leading, as in a case already given, to the administering of a wrong drug.
- (d) Mistake in the matching of goods.
- (e) Mistake in selecting post-office stamps.

The dangers resulting from the employment of color-blind subalterns on railroads have been the subject, as we will see, of frequent investigation. The necessity of a capacity to detect colors in those engaged in the navigation of ships is at least equally pressing, since color as an agency for signalling cannot be dispensed with in navigation.

"If we turn," says Dr. Jeffries, "from the land to the sea, we shall find the dangers from color-blindness as great, or even greater. The largest majority of those color-blind are so for red and green. These, however, are the colors necessarily chosen by all nations to be by law carried on the two sides of all vessels from sunset to sunrise; the green light on the starboard side, and the red light on the port side. These are so arranged that they can only both be seen when the vessel is directly ahead, and far enough off to allow us to see both sides. These lights show us, therefore, the position and the direction of motion of a vessel. Mistaking their color will of course be most exactly how many of their employees are 'satisfactory in every particular' as to sight and hearing; and that the examination will have the further value of making the division superintendents acquainted with the general aptitude of the men in their divisions as to general intelligence.

"5. That the entire examinations can be made at the rate of at least six men an hour; whilst that for color-sense alone can be done in a very few minutes for each man by an intelligent employee.

"6. That to secure the confidence of the employes, and of competent scientific critics, as well as of the public generally, it is advisable to have some official professional specialist to whom all doubtful questions could be referred, and who should be held responsible for the accuracy of the instruments, test-cards, etc., to be put in use, and who should have a general supervision of the entire subject of sight, color-sense and hearing.

"7. That from the impossibility of subjecting the immense number of employees on our large railways to the inspection of the few medical experts available, and to secure the examination of those hereafter to be employed, some system of testing by the railway superintendents has become a necessity, and it is believed that the one proposed will answer the purpose."

disastrous. Dr. Romberg has classified the reports of some maritime accidents from 1859 to 1866. They number 2408. Want of skill, or carelessness, of the ship personnel, or the accidents which it was impossible to prevent or avoid, 1562. Error of the pilot or captain, 215. Want of observation or proper interpretation of the rules of the way, 537. Undetermined causes, 94. Under the last three heads, in the large number of 846, there are probably some attributable to color-blindness. They all are not accidents from carelessness or want of skill; for those are included in another series. M. Léonce Raynaud and M. Dogram have demonstrated the effect of fog on the color of lights. Fog or mist makes white lights reddish. In thick weather green lights appear white. A sailing master meets a green light rendered pale by a thick night; in whatever amount he is color-blind, in that degree will the light appear white to him, causing most dangerous hesitation; or, even if convinced he has not a green light ahead of him, he manœuvres as if it were a red one. Color blindness may therefore well be considered as one of the causes of collision at sea. This imperfection may, however, occasion the loss of a vessel in another way; I mean in the recognition of lights on the coast, &c. Dr. Feris reports three cases of such mistake from the '*Annales du Sauvetage Maritime*,' vol. iii., 1873. He says: 'If color-blindness is considered a grave danger on railroads, how much more on the sea! Colors are very important to the mariner; the flags, the side lights, and even the lighthouses and buoys and beacons, present various colors. It is impossible for a helmsman or a signal man to interpret or transmit signals if they have no appreciation of color. The errors with flag-signals are not so likely on board of vessels, as they are employed in daylight, and more often controlled by officers in charge. But the men at telegraph stations are often alone, not under observation, and hence more likely to make mistakes. National flags may be mistaken, but more especially the white, red and green Bengal lights used as night signals. * * * If good color perception is necessary for a helmsman, how much more for the commander of a vessel! The increase of collisions at sea is an indisputable fact. How many remain unexplained, or referred to another cause, which are no doubt due to the color-blindness of a single man!'

"The testing of color-blindness has already commenced in the navies of Prussia, Russia, Norway, Sweden, Denmark and Austria.

My friend Dr. Ed. Hansen, of Copenhagen, writes me June, 1877 : 'I have had the opportunity of examining a large number of the individuals who enter the royal navy. I hope some day to be able to give you some statistical information on this point, if you still take an interest in it.'

" Professor Holmgren reports as to the examination of 4225 Swedish sailors, finding 94 (or 2.22 per cent.) color blind. Dr. Lederer was appointed by the medical department of the Austrian navy to test sailors at the naval station at Pola. He examined of the sailors at the station and on the artillery schoolship Adria, 1312, finding (63 or 4.8 per cent.) color-blind. There has been some misunderstanding as to his report, due to his employment of Stilling's cards and pieces of colored glass and paper, instead of Holmgren's, an infinitely more sure and ready method with the worsteds.

" Dr. Feris, of the French navy, found, among 501 officers and men, 47 'who presented in varying degrees an alteration of the chromatic sense.' Their ages were between seventeen and fifty years.

" Dr. Favre, in France, records the examination of 1050 men for the navy or lighthouse department, and finding 61 (or 5.8 per cent.) more or less color-blind. In discussing this question, he also makes some remarks in reference to the loss of the French steamer 'Ville du Havre' by collision with an English sailing-vessel. This fearful accident most painfully interested us Bostonians, since so many were lost from our midst in that ill-fated vessel. I have frequently expressed in private my own suspicions that the accident may have been caused by color-blindness; but I will here simply quote Dr. Favre: 'After the loss of the Ville du Havre, the newspapers which described the collision stated most positively that the green light was not recognised in time. If the steamer's officer and crew, who should have seen the signal-light, were never tested for color-blindness, there is one chance in twenty that the officer or sailor whose duty it was could not distinguish green, and one in seventy-five that would confound this color with red. We know how the matter ended. The English admiralty decided that the English vessel was free from all blame, and the French admiralty declared that the French vessel could not be in any way criminated. No one thought of attributing the mistake to the very probable one of color-blindness.'

" I lately had curious proof of the color-blindness of a sea captain,

who, I understand, has now retired from active service. He was in the habit of working worsteds to while away the monotony of a sea voyage. These worsteds, however, always had to be picked out for him, and the colors marked, to avoid his making mistakes.

"Dr. Daae, of Kragerö, Norway, in a lecture on color-blindness, given April 10, 1878, before the Medical Society of Christiana, says, 'We must admit that the possibility of confounding the signal lanterns in general is not so great on railroads as on the sea. On the roads the glass of the lanterns, at least within the limits of each country, has a somewhat definite red or green color, which even those quite color-blind learn to distinguish by the difference in the intensity of the light. The signals, moreover, come at stated times and places, so that it is known where they are to be expected; and thus they can be seen and distinguished at leisure, as it were. Not so on the ocean. In the lanterns of the various vessels the color of the green or red glass varies considerably. The green glass varies also more in intensity than tone. Now let us suppose no signal light has been seen for some little time, when suddenly a red or green one appears, and but one. The question is then, is this a red or green light? The vessels are close, and instant decision is necessary. Or several lights are seen, and the ship we are in is sailing before the wind, and hence bound to keep out of the way. Most old sailors can remember cases where those on board were not agreed as to the color of a lantern. But how can having rules for the marine of one country only be of avail? On the ocean vessels from all parts of the world pass each other. When two vessels meet, it will help but little if the officers and crew of but one vessel have normal color perception. If they are color-blind on the other vessel, collision may occur. As to the railroads, it is not of such importance that the requirements as to color-blindness should be the same in all countries. If one country has one set of regulations, and another a different one, whilst the third requires no examination, it concerns only the individual country itself. But, as to the marine, it is necessary to have an international law.'

"The test for color-blindness now being so simple as to be readily carried out by the surgeons attached to vessels, especially naval medical officers, there can be no great difficulty in having an international commission meet, and frame the laws which shall govern all the navies and merchant marine of the great maritime nations at least.

It would then be as readily recognised that every officer and man must be as able to perfectly distinguish the red and green lights as to know where they belong, and what they mean."¹

"My friend, Dr. Henry Power, writes me from London, June 1, 1878:

"Color-blindness is a subject of great public concern. As showing also its private relation, I may mention an interesting case that came under my care lately, in which the man was a draper, who had long by great ingenuity, conducted a business on his own account; always getting an assistant to bring down the particular bundle of color demanded by the customer, and then selecting the particular tint by its shade. He was now going into much larger business, and wanted to know if his disease could be cured, or whether his future partners should be told of his defect. A 'no' and a 'yes' settled these points, and I have heard no more of him; but it was curious that, in the course of twenty-five years, he had never been out."²

"The question," says Dr. Jeffries, in another place, "of correctly distinguishing colors comes up in a practical form more often than we imagine in every-day life. Such articles as the following, clipped from the newspapers of a day, attract naturally the attention only of those specially interested in or investigating color-perception:³

¹ Jeffries on Color-blindness, 161.

² Ibid. 109.

³ "New Bedford, Aug. 30.

"Masters of vessels arriving at Vineyard Haven complain that, since the red light at the East Chop has been removed to the new tower built for it, it is scarcely distinguishable from the West Chop, or any other fixed white light. The captain of schooner 'Hannibal,' of Islesborough, Me., made it on Saturday evening, approaching from the eastward, in thick weather, and called it West Chop light and changed his course to run in Vineyard Haven Harbor, and just escaped running ashore near Oak Bluffs by making the light at that place through the fog. Such accidents as the above can only occur, however, in thick weather, when but one of the two lights on the Chops of the harbor can be seen at the same time."

In addition to what has been stated it may be added that there are many important industries to which an accurate perception of colors is essential. "The sense of color which the eye possesses," says Dr. Jeffries, in his pamphlet on "Our Eyes and our Industries," Boston, 1844, "in addition to the sense of form, has almost been forgotten as a distinct sense, so intimately does it seem associated with an impression of form. Upon it, however, depend many of our industries, as much as upon the sense of form. Its careful cultivation is very necessary for the future success of several of our Massachusetts industrial employments. At the present an educated sense of color is of great value to its

§ 952. *Remedy.*—*Examination of officials and agents.*—Assuming that color-blindness is incurable, there are but two lines of remedy that can be pursued. The first is the personal examination as to sense of color of all persons who are filling or seeking to fill any position in which accurate perception of color is requisite. This course is now adopted in some countries by public authorities, in others by private action of employers. In Denmark, according to the report of Dr. de Fontenay above cited, all the employees of the public (State) and private railways have been examined, in order to ascertain their sense of color (except in the case of one private company, which did not seem to think such an examination necessary); and henceforth all candidates for situations on railways are to be tested. Candidates for admission to the school of naval officers also submit to an examination.”¹

possessors, and to those who require their skilled labor. Whilst women can and do enter the industries formerly occupied solely by men, the latter, from a lack of an educated sense of color, are prevented from entering the others now occupied by the female sex, simply because they lack this specially cultivated color-sense derived from natural education. All this entirely aside from the fact, which I as well as others have so thoroughly shown by the testing of thousands of males, that the latter are so destitute of and unfamiliar with color-names. Color-names can and should be taught our boys in school, by which their color sense would be educated to fit them for the positions and occupations they are to support themselves by; I mean the several handicrafts.”

On the subject of mistake in the selection of post-office stamps, Dr. Jeffries thus writes:

“A post-office clerk in Prussia was found to be constantly in trouble with the stamps. The accounts would come wrong. Sometimes there was not enough money in return for stamps sold; and on other occasions there was too much. This made dishonesty on his part less likely; but it was incomprehensible how he would make the accounts so entangled. At length it was discovered that he was color-blind and could not tell red from green stamps. (“Boston Medical and Surgical Journal,” Dec. 27, 1877.) No doubt letters in the United States find their way to the Dead-letter-office as unpaid from the color-blind senders putting on red two-cent instead of green three-cent stamps, since we all, from habit, regard the color rather than the number on a postage stamp, especially when in haste.” Jeffries on Color-blindness, p. 20.

¹ In a speech by Mr. Harris of Massachusetts, in the Federal House of Representatives on February 18, 1881, the following extract from the report of the committee on naval affairs is given: “A classification in Europe of the reports of 2408 accidents between 1859 and 1866, showed—

§ 953. *Adoption of substitutes for colors.*—Dr. Tidy informs us that an English inventor, J. J. Nickoll, has brought out a system of

| | |
|---|------|
| Want of skill, carelessness of the ship <i>personnel</i> , or accidents which it was impossible to prevent or avoid | 1572 |
| Error of pilot or captain | 215 |
| Want of observation or proper interpretation of the rules of the road | 537 |
| Undetermined causes | 94 |
| | 2408 |

"Under the last three heads are eight hundred and forty-six accidents which might have been due to color-blindness or defective vision.

"While maritime powers have sought to eliminate the danger from color-blindness by requiring examinations, all have not directed such methods to be used as would render the elimination certain. Moreover, all are not agreed as to the requisite amount of color perception necessary to render a lookout perfectly safe for the vessel the lookout is on, as well as for the one approaching. There is also no definite standard of visual power acknowledged as necessary in the navigation of vessels. Mutual intercourse and the comparison of the results of different tests would enable the maritime nations taking part in it to avail themselves of each other's experience, and readily lead to the adoption of the best methods of examinations and the requisite standard of requirements.

"Dr. Jeffries, in his 'Manual' above mentioned, says: 'The test for color-blindness now being so simple as to be readily carried out by the surgeons attached to vessels, especially naval medical officers, there can be no great difficulty in having an international commission meet and frame the laws or regulations which shall govern all the navies and merchant marines of the great maritime nations at least. It would then be as readily recognised that every officer and man must be able perfectly to distinguish the red and green lights as to know where they belong and what they mean.' This author's experience is based upon the examination of over 30,000 individuals, and corresponds with that of all the scientific European observers. The final conclusion in his Manual is: 'An international commission should be called to establish rules for the control of color-blindness on the sea, and the carrying out the same examinations among pilots, masters and crews of steamers and sailing-vessels in the navies and the merchant marine.'

"It will avail but little if, of two vessels of different nations meeting, but one of them has no color-blindness on the lookout. An international commission would, from the weight of its authority, force examinations even among those nations not participating in it, as well as to settle standards, methods and requirements."

In the course of Mr. Harris's speech he says: "The Boston and Hingham Steamboat Company, who carry thousands of pleasure seekers to and from Nantasket Beach at night, through a tortuous channel and among the shipping in the harbor, have the past two seasons had all their officers and employees tested by a medical expert, although not called upon by the law so to do. Now, this expert had no standard, universally recognised, to guide him. He says in

helm-signals. In describing his invention to the Inventor's Institute, Mr. Nickoll says: "As my signals move automatically with the rud-

his report of June 28, 1879, that his decision as to fitness was guided 'by the usual standard, and the color-test being adopted by the navies, pilot service and merchant marine of Europe, and enforced on the railroads there.' Had he had a standard agreed upon as safe and fair by an international commission it would have been of great service. Refusal to give a certificate naturally excites in the mind of the *examined* an idea of something personal, which the medical expert has to bear the brunt of."

The following resolutions were adopted by the International Medical Congress, London, 1881, as to "Tests of Sight suitable to be enforced in the case of Signallers and Look-out Men, and other persons by Land or Sea, with suggestions as to International arrangements for a uniform system of Maritime, Coast and Harbor Signalling, with a view to the safety of life and property;" followed by explanatory remarks under the several articles.

"A.—WITH RESPECT TO LAND.

"(1) That the recommendations of the last International Medical Congress, held at Amsterdam in 1879, are accepted by the present congress as forming the most suitable basis upon which every government may frame its own regulations as to its railway service. They are contained chiefly in Article XII. of the 'Projet d'un règlement pour l'examen des facultés visuelles du personnel des chemins de fer,' laid before and accepted by the Ophthalmological Section of the Amsterdam Congress, which is nearly as follows:

"For admission as *driver* or *stoker*, is required a healthy condition as regards habitual congestion or irritation of the eyes and eyelids; *for each eye*, complete field of vision; normal acuity and refraction; color sense at least four-fifths of the normal; total absence of commencing cataract, or any other progressive disease.

"For admission to other *railway service*, is required a healthy condition as regards habitual congestion, or irritation of the eyes and eyelids; *for each eye*, complete field of vision, total absence of cataract, or any other progressive disease; *for one of the eyes*, normal acuity and refraction, color sense at least three-fifths of the normal; *for the other eye*, sight of at least half the normal, as regards both acuity and color sense."

"B.—WITH RESPECT TO SEA.

"(2) That in *ocean-going ships* and in *all steamers*, especially those carrying passengers, there should always be in actual control of the helm a person possessing *with the two eyes together, without glasses*, normal sight, both as to acuity and colors; and that, *in addition*, in such ships, *at least one* of the persons actually on the look-out should be similarly qualified.

"(3) That, in vessels engaged in the coasting trade, every person liable to take charge of the helm should possess *with the two eyes together, without glasses*, sight equal to at least two-thirds of the normal, both as to acuity and colors.

"(4) That all persons engaged in marine signalling, ashore or afloat, and all

der, every material shifting of the helm to the port or starboard, is at once shown at the head of the vessel by a red or green light, and before she answers her helm, thus giving timely notice to an approaching ship what course she is about to steer. The signals act independently of the regulation mast-head lights."

As if the present necessary marine signals were not difficult enough to read quickly, a writer in "The Scientific American" proposes that there should be exhibited a red light for north, green for south, yel-

pilots, should have normal sight, both as to acuity and colors, as defined in Article 2.

"(5) That hypermetropic persons, although satisfying the requirements of Articles 2, 3 and 4, should, nevertheless, not be admitted, if before the age of eighteen they have a manifest hypermetropia of one dioptrē.

"(6) That re-examinations should be made at the age of forty-five.

"(7) That the examinations should be conducted by persons of recognised competency, under the direction of a central medical authority in each country.

"(8) That an international commission should be constituted, to fix upon such further measures as to signals as may be necessary for safe navigation, and, specially, upon the standard colors, and the sizes of the signals employed."

Dr. Jeffries in his work on Color-blindness, thus writes :

"Professor Holmgren is at the head of the control in Sweden; and his practical knowledge and experience render, of course, all he says of great value to us about to commence this work in the United States. He states as follows : 'No half-way measures are allowable. All employees with defective chromatic vision must be removed from posts of danger. They should be required to distinguish the signals by their color as the normal-eyed can. The violet-blind may be allowed on the road. This defect is so rare as to be scarcely ever met with. There are, of course, positions on the road not requiring the reading the signals ; but it is a bad plan not to be able to call on any employee in an emergency. Any method of testing for the elimination of the color-blind will be in place which is *tuto citot et jucunde*, the carrying out of which gives the best results in the quickest time, and is open to the smallest amount of difficulties and misunderstandings. It must not fail to detect a color-blind, or prove that an employee is normal-eyed. Whilst there must be no question of thoroughness, it is to be remembered there are hundreds to be examined, and but little time can be given to each individual. We cannot have heavy or costly apparatus to be transported. These points are to be considered in reference to any method.'

"Testing should be only in the hands of those who understand it. On the roads and in the marine the surgeons have a scientific knowledge necessary to carry out examinations. On board ship the sailors could be at least roughly tested by the captain. There are cases where a specialist would need to be employed to decide whether color-blindness existed or not, as an ordinary surgeon would shrink from answering because not in position so to do. So, also, a specialist would be called upon to decide whether the defect was simulated."

low for east and white for west. When steering due north a red light is to be shown ; when steering north-north-east one light under this ; north-east two lights ; east-north-east three lights, &c. ; and so on for the other points of the compass. Every change of course is to be immediately followed by a change of these lanterns. Such a proposal but expresses the general lack of appreciation of the difficulties with all night signals.'

"The Eastern Railway Company has recently placed upon the whole route of its line patent switches painted red, with an index pointing across the track if all is not right. At night a green lantern signifies the track is clear, and a red one if not. The company claims that by this simple arrangement accidents will not be of so frequent occurrence as under the old system of signals."

In a communication that appears in the Philadelphia Times of Feb. 7, 1884, and which purports to give an interview with Dr. William Thomson, whose eminent ability as an oculist has been appealed to in this relation by the Pennsylvania Railroad, the substance of the following statement is given :

"There has been going on quietly for some time over the Pennsylvania Railroad, wherever its lines extend, the most important measure of reform in the interest of the safety of the lives of the travelling public that scientific research and discovery has been called upon to suggest since railroads themselves came into existence. It is the examination, by scientific formula, of all the employees of the road concerned in the running of trains, in order to test their perception of color, sight, and sense of hearing, and the removal from position of all engineers, brakemen, switch-tenders and flagmen who, in the very rigid examination applied, fail to prove their ability to tell at a glance the color of flags and signal lights at long distances by day or night. In realizing the grave importance of the subject and applying thoroughly to its solution the results of scientific investigation the management of the Pennsylvania Railroad has taken the initiative in this country. Efforts have been made by legislation—notably in Massachusetts, where the matter is now in the hands of a commission—to compel railroad companies to submit their employees to examination for color blindness, but little or no progress of a practical character has been made.

"Although at first the usefulness or necessity of such a radical and far-reaching measure was pooh-poohed by some of the subordinate officers of the Pennsylvania Railroad Company and by the great mass of the train men looked upon as a piece of tomfoolery, as the examinations have preceded and their results been made known a great change of sentiment has taken place, and men who have been running engines without accident almost all their lives have been brought to admit themselves that circumstances might at any time have occurred whereby their own and the lives of others would have been sacrificed through their defective vision and lack of the color sense.

"At Professor Thomson's office, on Walnut street, there are a dozen or more

of the most ingenious arrangements for testing color-blindness that have ever been devised. When the employee who has failed to tell red from green on the yarn stick comes for final examination, generally accompanied by his friends and sometimes by his superintendent, he is usually subjected to two plain and convincing tests, one by means of flags and the other by means of lights. As is well known, a white flag, which means safety in use on a railroad, soon gets gray and always looks so at a distance. To most color-blind persons green or red is taken for gray, and on the railroad the green flag means caution and the red "danger, stop instantly."

"Since the color blind are unable to distinguish between red and green the question is often asked: Why do not railways and vessels at sea use blue and yellow lights and flags, which every one can distinguish? The answer is that there are chemical reasons which make it impossible to use these colors effectively at night, and consequently railways and ocean steamers and sailing-vessels the world over use red, white and green lights only. One of the most interesting facts in connection with the subject is that the officers of the Pennsylvania Railroad Company have been enabled in a number of cases to trace accidents involving the destruction of railroad property and sometimes of lives, to possible color-blindness existing in the person who was responsible for the accident. Some very remarkable cases could be cited. Experts who have been giving the subject their attention assert also that it is the primary cause of a great number of collisions at sea, the explanation of fatal mistakes of coast-lights, and the solution of the enigmas so often presented of contradictory statements made in evidence, especially in murder cases, of the color of the clothes worn by participants."

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